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# OSTEOMYELITIS OF THE FRONTAL BONE

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The valuable information given to us by leading otolaryngologists within the past ten to fifteen years has revolutionized the treatment of osteomyelitis of the frontal bone.

### *Etiology*

Osteomyelitis of the frontal bone occurs most frequently in individuals below the age of 30. The acute, fulminating type is more apt to follow swimming or trauma. Acute and chronic sinusitis, as well as certain frontal sinus surgical procedures may also initiate an osteomyelitic complication.

The organisms responsible for osteomyelitis of the frontal bone are, in this order of frequency: Staphylococcus aureus, streptococcus, and pneumococcus.

### *Anatomy and Avenue of Infection*

There is not much evidence of development of the frontal sinus above the orbital ridge before the sixth year. The ethmoid cell which becomes the frontal sinus may obtain considerable size before ascending into the perpendicular portion of the frontal bone[1]. The greater susceptibility of some persons to osteomyelitis following sinusitis can be attributed to extensive development of diploe in the frontal bone and walls of the frontal sinuses[2], particularly in women and children. There are two large diploic veins in the frontal bone—the frontal and anterior temporal, called veins of Breschet—through which the infection is very apt to travel. The diploic veins connect with the dura and periosteum.

### *Pathology*

Pus and granulation tissue fill the diploe, causing actual necrosis, within seven to ten days[3]. If the infection travels through the outer table, the haversian canals as well as the veins of the scalp become thrombosed. A retrograde thrombosis may progress into the neighboring bone and into the extradural network, producing isolated islands of osteomyelitis in advance of the process in the inner table. The bone may become dark and abscesses may dissect the dura and periosteum from the bone.

The miscroscopic picture may be summarized as follows:

(1) Edema of the myeloid tissue occurs first.

(2) An inflammatory reaction is present in which there is hemorrhage and thrombosis within the spongy bone.

(3) Absorption of bone and production of granulation tissue follow.

(4) Sequestration occurs later.

(5) Osteoclasts and osteoblasts are both active in the diseased bone.

(6) The infection may extend one and one-half inches past the area of necrosis.

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(b) Osteomyelitis of the Frontal Bone as a Complication of Frontal Sinusitis, J. A. M. A. 115:1179-1182 (Oct. 5) 1940.

*Symptoms*

Osteomyelitis of the frontal bone has been classified into the fulminating, the localizing, and the spreading types[4]. In fulminating osteomyelitis there is usually a history of swimming, trauma and sinusitis with intense pain and headaches, and a high fever of a septic nature. There is a rapidly spreading edema over the frontal area with a tendency to spread early to the arachnoid and cranial sinuses. A high leukocyte count is present.

The localizing or self limiting type is milder. Usually a smaller area is involved and the process becomes stationery. The spreading type of osteomyelitis produces a clinical picture of progressive edema of the frontal area, but the patient does not appear very ill. However, these milder forms may change at any time to the fulminating type. There is always grave danger of complications from any of these types. Since one type may merge into another, it is best to consider them as various stages of the same disorder and to deal with them by radical surgery as soon as this is feasible.

The first sign of osteomyelitis of the frontal bone is a pitting edema (Pott's puffy tumor) which is soft and doughy. Severe frontal headaches are reported to be a rather constant feature, but, as in the case herein reported, headaches may be absent. Seven to ten days generally elapse before bone necrosis has progressed sufficiently to produce positive x-ray findings.

*Complications*

Extradural abscess is the most common complication of osteomyelitis of the frontal bone. It may be present for some time without producing any symptoms. Unless the abscess is extremely large, the symptoms of intracranial pressure are not present. By far the majority of such abscesses go undiagnosed until the frontal bone is removed during operation for the osteomyelitis. This is the least dangerous of the complications.

Meningitis is not an uncommon complication. The classic findings are so well known that they need not be repeated here. Recoveries are quite frequent when the sulfonamides are administered early.

The symptoms of frontal lobe abscess may be vague when it develops in the silent areas. Headache is a prominent complaint, and is usually of a boring type and worse at night. In the early stage, there may be chills and some fever. The symptoms practically disappear during the latent stage, which may last from a few weeks to several months. When the manifest stage appears, there is another rise in the temperature and the pulse becomes slow—indicative of intracranial pressure. Personality changes, vomiting, convulsions, and epileptiform seizures may also occur. The finding of optic neuritis, choked disc, dilation and tortuosity of the retinal veins will aid in making the diagnosis. Ventriculograms are helpful. If there is evidence that the brain is under increased pressure when the dura is uncovered during the operation for osteomyelitis, needling of the frontal lobe in the area where granulation is present on the dura will often locate such an abscess. The mortality in frontal lobe abscess is very high.

*Mortality*

The high mortality rate in osteomyelitis of the frontal bone is due largely to the complications. I have analyzed the mortality rate in three ways: (1) in cases following sinus surgery; (2) according to the causative organism; (3) according to the type of operation performed for the osteomyelitis. Such statistics must be interpreted liberally, since so many variable factors play an important role.

According to reports in the literature[5], the mortality rate in osteomyelitis of the frontal bone following sinus surgery is high —from 79 to 100 per cent. The entrance into the frontal sinus by the Ogston-Luc or Killian technique is through the anterior wall, which is diploic or spongy; consequently avenues for the spread of infection are opened. Injury or elevation of the overlying periosteum predisposes to osteomyelitis by interfering with nutrition of the bone. The destruction of portions of the frontal diploic veins could in itself initiate an osteomyelitic process. In the Lynch type of operation, the

4. Williams, H. L. and Heilman, F. R.: Spreading Osteomyelitis of the Frontal Bone Secondary to Diseases of the Frontal Sinus, Arch. Otolaryng. 25:196-207 (Feb.) 1937.

5. (a) Bulson, A. E., Jr.: Osteomyelitis of the Frontal Bone as a Complication of Frontal Sinusitis, Tr. Am. Acad. Ophth. 31:102, 1925.
(b) Furstenberg, A. C.: The Treatment of Acute Nasal Accessory Sinus Disease, Ann. Otol. Rhin & Laryng. 47:902-909 (Dec.) 1938.
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(e) McNally, W. J.: Some Considerations Concerning Acute Frontal Sinusitis, Tr. Am. Laryng. A. 56:97-125, 1934.

entrance to the frontal sinus is through the thin non-diploic bone of the floor. There is less danger of osteomyelitis, because the nutrition of the outer sinus walls is supplied by the undisturbed periosteum, and no avenues for infection through the diploe have been opened. Osteomyelitis resulting from intranasal frontal operations probably occurs because of the trauma caused by the rasp, which grinds or rubs the infection into the bone.

Apparently streptococcic osteomyelitis of the frontal bone produces a higher mortality than staphylococcic osteomyelitis. Most of the reports in the literature appeared before chemotherapy with sulfonamide derivatives supported our therapeutic armamentarium.

**Table 1**

| *Mortality According to Types of Surgery* | *Mortality Rate* |
|---|---|
| **Conservative surgery** | |
| All cases reported from 1895 to 1925 | 60-75% |
| MacMillan[6] | 58% |
| Kazanjian and Converse[7], 6 cases | 83% |
| **Radical or complete surgery** | |
| Furstenberg[2], 14 cases | 43% |
| Behrens[8], 7 cases | 28.5% |
| MacMillan[6], 17 cases, 2 cases with meningitis before operation | 25% |
| With these 2 cases deducted | 12.5% |
| Mygind[9], 13 cases | 15% |
| Schmidt[10], 12 cases | 16.6% |
| McKinney[11], 8 cases | 37% |
| Kazanjian and Converse[7], 8 cases | 0 |
| Jones[12], 7 cases | 0 |
| Stevens[13], 3 cases | 0 |

Notice the relatively low death rate reported in cases in which radical surgery was employed. McKenzie[14] sponsored such a procedure in 1913.

### *Prognosis*

The prognosis in osteomyelitis of the frontal bone resulting from infection of the sinuses should be guarded because of the danger of intracranial complications. Early diagnosis and complete removal of the diseased bone well beyond the infected area certainly reduces the probability of intracranial complications. Chemotherapy, transfusions and other necessary supportive treatment have reduced and will tend to reduce further the loss of life from this disease.

### *Treatment*

As has been shown by recent contributions to the literature, wide excision well past osteomyelitic bone should be made. Several types of incisions for the removal of the diseased frontal bone have been sponsored. The U-shaped incision demonstrated by Skillern[15], is made so that the lower part of the U runs along the supra-orbital ridge. In the inverted U or coronal incision, sponsored by Kettel[16], the cross portion of the incision is above the hair line of the forehead. The inverted T incision with rounded angles above the eyebrows, which is now used at the Massachusetts Eye and Ear Infirmary[7], is the most satisfactory for the following reasons:

(1) It allows adequate inspection of the bone edges during the dressing for the period the wound is left open.
(2) Excellent exposure can be made for the removal of bone if there is further extension of the osteomyelitic process.
(3) It affords excellent drainage.
(4) Good plastic closure can be obtained by criss-cross incision of the under side of the flaps. The scar may be small or may be quite noticeable, but the advantages far outweigh this disadvantage.

The removal of the diseased bone can be done by a Gigli saw or with ronguer forceps after the periosteum is first elevated and reflected. The superior longitudinal sinus is easily separated from the bone. Frontal sinus walls should be removed. Care should be taken to protect the dura. Any granulations should be removed and the wound irrigated with normal saline and an antiseptic. The dura is then covered with vaseline gauze or paraffin mesh to prevent the skin flaps and periosteum from adhering to the dura. At each dressing thereafter, the bone edges

6. MacMillan, A. S.: Osteomyelitis of the Skull Following Frontal Sinusitis, J. A. M. A. 115:1176-1178 (Oct. 5) 1940.
7. Kazanjian, V. H. and Converse, J. M.: Reconstruction After Radical Operation for Osteomyelitis of the Frontal Bone, Arch. Otolaryng. 31:94-112 (Jan.) 1940; also Tr. Sect. Laryng., Otol., & Rhin., A. M. A., pp.163-183, 1939.
8. Behrens, H. C.: Osteomyelitis of the Skull of Otitic and Paranasal Sinus Origin, Arch. Otolaryng. 25:272-304 (Mar.) 1937.
9. Mygind, S. H.: Heruntersloppen des Scalpa bei Ostitis Frontalis, Acta otolaryng. 26:537, 1937, cited by Kettel (16).
10. Schmidt, H.: Osteomyelitis of the Flat Cranial Bones, Especially the Frontal Bone, Arch. f. Ohren-Nasen- u. Kehlkopfh; abstracted in the Year Book of Eye, Ear, Nose & Throat, Chicago, The Year Book Publishers, 1938, p. 482.
11. McKinney, R.: Osteomyelitis of the Frontal Bone, Arch. Otolaryng. 28:1-9 (July) 1938.
12. Jones, A. C.: Osteomyelitis of the Frontal Bone with Report of Thirteen Cases, Ann. Otol., Rhin. & Laryng. 49: 713-727 (Sept.) 1940.
13. Stevens, J. B.: Osteomyelitis of the Frontal Bone: Report of Three Classified Cases, Arch. Otolaryng. 33:694-706 (May) 1941.
14. McKenzie, Dan: Diffuse Osteomyelitis from Nasal Sinus Suppuration, J. Laryng. 28:6, 79 and 129 (Jan.) 1913.
15. Skillern, S. R.: Osteomyelitic Invasion of the Frontal Bone Following Frontal Sinus Disease, Ann. Otol., Rhin. & Laryng. 48:392-411 (June) 1939.
16. Kettel, K.: Osteomyelitis of the Frontal Bone, Surgical Treatment: Which Way of Approach Is Best? Arch. Otolaryng. 31:622-625 (Apr.) 1940.

are inspected and any unhealthy appearing granulations and diseased bone are removed. The wound should be left open one month or longer, after which time the closure may be done if the bone and granulation tissue appear healthy. Mosher believes that three months should elapse before closure should be considered. The flaps will have retracted considerably. Criss-cross incisions on the under side of the flaps, described by Kazanjian and Converse, will allow the edges to be brought into close approximation. The flap edges should be freshened to allow free bleeding before being sutured. Rubber dam drains should be used at the outer angles so that any serum accumulation may drain. With the delayed closure there is much less danger of abscess pockets, brain abscess or necessity for reoperation for recurrent osteomyelitis. Dolman and others have used bacteriophage intravenously and locally with good results. Frequent blood transfusions are beneficial. Chemotherapy with the sulfonamide derivatives should be used. Close cooperation between the otolaryngologist and the pediatrician or internist will add to the patient's safety.

An external protector of a light plastic material or aluminum should be worn, particularly by children, until regeneration of bone has occurred, or until a plastic transplant operation is done. Furstenberg and Kettel have found that bone regeneration occurs quite frequently. Mosher had only two cases of bone regeneration, both in children. Adults are not so apt to repair the loss of bone as are children. Plastic transplants should not be considered sooner than one to two years after the original operation, as it frequently takes around eighteen months for new bone formation to fill the defect.

The following case is reported because of the unusual development of osteomyelitis complicating sinusitis in a child less than 6 years of age. This case further emphasizes the value of early diagnosis and proper treatment.

*Case Report*

A 5½ year old boy who had been ill for about a week was admitted to the hospital on July 13, 1941, with the complaint of fever and slight frontal headache. He had been subject to frequent colds and fever and bronchial cough for two years. The temperature on admission was 102 F., the pulse 120, and respirations 26. Moderate nasal congestion was present, with only a small amount of tenacious mucopurulent exudate. The tonsils were hypertrophic and injected. Large adenoids were present. The blood picture revealed a leukocyte count of 9550 with 84 per cent polymorphonuclear leukocytes and 16 per cent lymphocytes; there were 3,383,000 erythrocytes and a hemoglobin of 76 per cent. An x-ray of the sinuses showed the right antrum cloudy, and bilateral ethmoid infections. The frontal sinuses were barely visible about the orbital ridge.

Conservative sinus treatment was instituted, and sulfathiazole was given. The child never complained of headache after the first day in the hospital. Edema of the right upper eyelid and tenderness in the frontoethmoidal region appeared on July 16. The leukocyte count was 11,500. Roentgenographic studies did not show any change from the previous pictures. An antrum puncture and lavage were done on the right maxillary sinus on July 19 and 23. A very thick yellowish gray pus was obtained, which contained Staphylococcus aureus on culture.

On July 28, there was fluctuation, and the orbital abscess was drained through the right upper eyelid. Amputation of the anterior tip of the right middle turbinate was done. The anterior ethmoid cells were opened and a naso-antral opening into the maxillary sinus was made. The child improved rapidly, and he was allowed to go home in a few days, to return at intervals for observation and treatment of the sinuses. On August 12, there was some swelling in the midline of the frontal region with slight tenderness, but no headache. A feeling of roughness was noted in the area where the right and left large diploic veins are located. X-ray of the skull showed erosion of the outer table of the frontal bone. The temperature had risen to 99.2 F., and the laboratory reported a leukocyte count of 7,550 and 3,560,000 erythrocytes.

Four days later, under ether anesthesia, an inverted T incision was made according to the technique used at the Massachusetts Eye and Ear Infirmary. The periosteum was reflected and sutured to the skin flaps. The frontal bone was found to be eroded down almost to the orbital ridges. The inner table was perforated in the midline and granulations were found on the dura at this point. The dura otherwise appeared normal, and the brain was not under tension.

The anterior and posterior walls of the small frontal sinuses were carefully removed. The sinuses contained much polypoid degenerative mucosa. The frontal bone was removed one-half to one inch into apparently healthy bone, except for the orbital ridges which were conserved to minimize the deformity. The dura and wound were irrigated with normal saline solution during the operation. Paraffin gauze was placed between the dura and the skin flaps, and sterile dressings were applied.

The patient continued to run low grade fever for about one week, but felt good and had no headache. Sulfathiazole was given during this time. The bone at the outer angle of the right orbital ridge became affected. This was removed well into apparently healthy bone on September 4. There was no recurrence of fever and the plastic closure was performed on September 16, one month after radical operation.

One transfusion was given during the operation, another on August 19, and a third of 300 cc. two days after the plastic closure. The temperature returned to normal two days after the wound was closed, and to the date of writing has remained normal. The patient was discharged from the hospital on the ninth day after the plastic closure, feeling perfectly well. An aluminum shield was fitted for the operative area. This has been worn since that time. X-rays of the ethmoids and antrums were negative on September 27.

Eight months have elapsed since the wound was closed. The patient has been perfectly well with the exception of one mild cold during the winter. It is too early to tell whether or not there will be regeneration of the bone.

This case emphasizes several important points.

(1) Osteomyelitis of the spreading type can develop insidiously, with the temperature and leukocyte count remaining normal or with a very slight rise.

(2) The pitting tumor over the frontal region was the first clinical evidence of osteomyelitis. The erosion of the outer plate along the veins of Breschet could be palpated.

(3) There was no headache during the development of osteomyelitis in this child, even though there were granulations on the dura.

(4) The outer angle (temporal portion of the frontal bone) must be especially watched for the spread of the osteomyelitic process and removed as soon as it is evident.

(5) Even though the pansinusitis was staphylococcic in origin, prolonged treatment with sulfathiazole did not prevent the occurrence of osteomyelitis. Whether it prevented further spread after surgery was performed is a matter of conjecture.

(6) An unusual feature of this case is the fact that there was very little drainage from the nose. The antrum irrigations revealed a thick heavy grayish material of the type which settles out in bronchiectatic sputum. A diagnosis of sinusitis was first made by x-ray.

(7) The pediatrician and internist must be ever watchful for acute sinusitis in young children as a complication of coryza or of the acute exanthematous diseases, since the ethmoids and maxillary sinuses are fairly well developed in early life. Osteomyelitis of the frontal bone may result from ethmoid and frontal sinusitis, even though the latter may be only partially developed in children as young as 5½ years of age.

(8) Conservative treatment by antral irrigations, amputation of the anterior tips of the middle turbinate, and external drainage of the orbital abscess brought clinical improvement in this patient.

(9) The value of delaying closure of the wound for at least one month is brought out. It allows inspection of the bone edges when dressings are done, which is much more valuable than depending upon x-ray findings. Any unhealthy granulation tissue which may accumulate on the dura can be removed.

(10) The early diagnosis, the good physical condition of the patient at the time of the osteomyelitic development, and the immediate radical surgery were salient factors in this patient's recovery.

### *Abstract of Discussion*

**Dr. V. K. Hart** (Charlotte): I think it can be said that we have three schools of thought regarding the treatment of osteomyelitis of the frontal bone: the ultra-conservative, the more moderate group, and the radical group. In the ultra-conservative group there are some who believe that in the early stage we should use nothing but conservative treatment.

The second school of thought holds that in the fulminating type of osteomyelitis it is good judgment and good surgery to do simple drainage of the frontal sinus and then wait for stabilization of the process before doing the radical surgery.

The third group has perhaps been best exemplified in this country by Mosher. This group feels that if operation is performed it should be radical and all

diseased bone should be removed. I think Dr. Mosher has modified his views somewhat since the advent of the sulfonamides. I think he has yielded a little to the conservative school.

We have been wont to depend upon the sulfonamides too much. In cases in which the hemolytic streptococcus, the staphylococcus, or the pneumococcus is the causative organism the sulfonamides are unquestionably a valuable adjunct to therapy. However, we must not forget that some of these infections are due to the anaerobic streptococcus, and particularly those cases that begin with a dental infection. I think it is the consensus of opinion that in these cases the sulfonamides are of no particular clinical usefulness. I know of no experimental work that has shown the sulfonamides to be effective against anaerobic streptococci. Cases with frank empyema must have surgical drainage in connection with the sulfonamides. Experiments have indicated that in the presence of pus, for some chemical reason, the sulfonamides lose their effectiveness. I also believe that in these bony structures in the presence of disease it is sometimes most difficult to get a therapeutic concentration of the drug because of the interference with the blood supply. If there is an empyema of the frontal or maxillary sinus, some drainage will be necessary in addition to drugs. We cannot depend on these drugs to the exclusion of other means of treatment.

The complications can be divided into those occurring by direct extension with erosion (extradural abscess, erosion of the dura, and subdural abscess or brain abscess or both) and those occurring by retrograde thrombophlebitis, in which we find no actual destruction of the wall, but in which the infection travels back through the small veins to the dura and often into the subdural spaces or brain. We have in Memorial Hospital now a patient operated on two weeks ago who had an intracranial complication with a bilateral frontal suppuration. We did radical surgery, removing both anterior and posterior plates and exposing the dura, but we did not find any lead such as we often find. There were no localizing signs. Suddenly a few days later the patient developed a hemiplegia and a large subdural abscess over the left temporal area was drained. I think the lateral veins were the portal of entry in this infection. This complication has a high mortality. A frontal lobe abscess is the more common lesion.

I believe that the type of incision is relatively unimportant. The most important thing is to be fearless, regardless of what type of incision you use; do not be handicapped by a small incision. The question as to whether it should be left opened or closed depends on the type and extent of the involvement and is a question of clinical judgment. Certainly if there is subdural pathology, the incision should be left wide open and a plastic closure done later. In some of our cases we have done a wide excision of the bone, beyond the area of involvement, and gotten by with primary closure.

If you are going to do surgery on the ethmoids don't do it intranasally; use the radical approach by the external route so that you can see what you are doing.

Sometimes even roentgenograms won't show an early osteomyelitis, and you must depend upon the clinical picture and your own surgical judgment.

I think Dr. Thacker gave an excellent presentation and I have enjoyed it. I thank you.

**Dr. Thacker:** I want to thank Dr. Hart for the discussion of this paper. He has brought out several interesting points.

I want to stress the importance of sinusitis in children. In this case the pediatrician, who was an excellent pediatrician, was at a loss to know what was causing the temperature in the child because he did not have a headache after the first day in the hospital, and practically no drainage from the nose. The pediatrician should be especially watchful for sinusitis in children where they cannot find anything else wrong but where the child is running a fever. This case brought out the fact that there may not be any nasal discharge. I have confidence in sulfonamide preparations, but this child developed an osteomyelitis while sulfonamides were being administered. I agree with Dr. Hart that we must not put too much dependence in the drug.

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## THE RECOGNITION OF VISCERAL TRANSPOSITION

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Since the seventeenth century reports of cases of situs inversus viscerum have been accumulating, and there are now more than eight hundred articles on the subject. Many of these reports in the literature are from countries in which compulsory military training has required the physical examination of all males reaching a given age. Now that the world is at war and selective service examinations are part of the daily routine, many additional examples of this condition will be encountered, but they will not be recognized unless the examining physician is aware of the possibility and confident of his physical findings. This paper is designed to call attention to the importance of recognizing situs inversus viscerum (SIV), both in military and civilian medicine, and to suggest that it is a condition far more common than is generally supposed.

### *Definition*

SIV is a congenital anatomical anomaly in which organs of the thoracic and abdominal cavities are transposed laterally (fig. 1) in mirror image fashion. It is not in itself a pathological condition, and life, for the affected individual, proceeds in its normal way. It is highly probable that a curious and intelligent person with SIV, living in a world predominantly populated by persons with situs solitus (normal visceral disposition), would one day recognize the dextroposition of his heart from obvious precordial pulsa-

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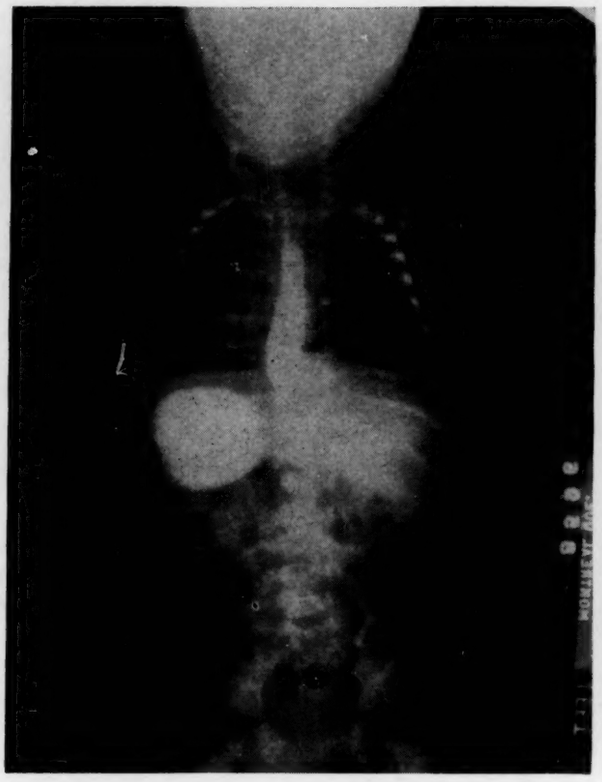

**Fig. 1. (Case III) Note dextrocardia, dextroposition of the barium-filled esophagus, and exchanged position of stomach and liver.**

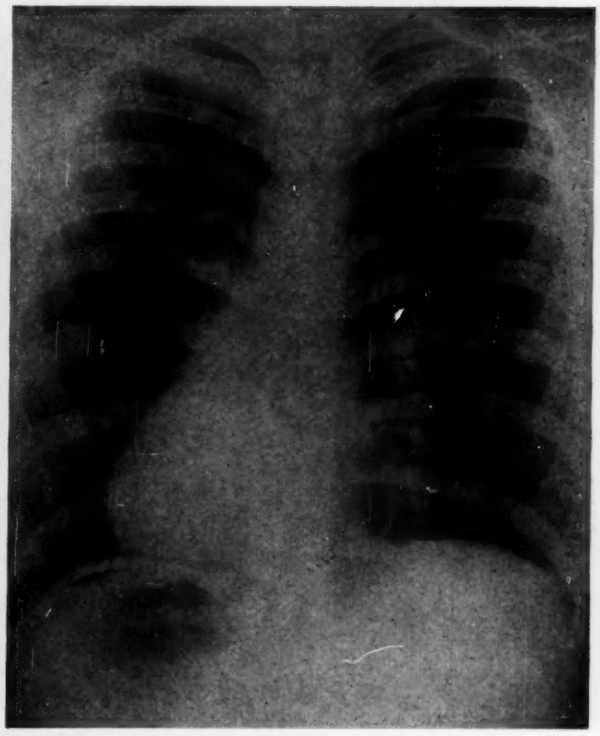

**Fig. 2. (Case XVI) True dextrocardia, transposition of the abdominal viscera. (Courtesy of Dr. P. A. Yoder)**

tions after muscular exertion, and that he would seek an explanation from friends or from his physician. However, Smith and Horton tell of a 47 year old woman with SIV who attempted suicide, unaware of her abnormality. She aimed "at the place where she thought the heart was situated and where, normally it would have been situated. The bullet entered . . . the fifth interspace about 3 inches . . . to the left of the sternum . . . was removed a few days later by a surgeon." Thus it is possible for the affected individual to reach middle life without an awareness of his anatomical peculiarity. Therefore responsibility for discovery rests with the physician.

### *Physical Examination*

In a person with SIV the apex impulse will be found on the right. This finding and the observation that the right testicle hangs lower than the left may be noted at a glance, tempting one to venture a snap diagnosis of SIV. Careful percussion of the chest and abdomen will reveal the transposition of the heart, liver, stomach, and spleen. In a thin subject the aortic transposition can be noted by palpating for aortic pulsation, which will be felt to the right side of the middle of the vertebral column. Whereas normally the right kidney is the lower, in SIV the left kidney is lower.

Fluoroscopic examination or the record offered by an x-ray plate (fig. 2), showing dextrocardia, a gas bubble in the stomach, and the exchanged positions of liver and spleen, will provide confirmation of the tentative diagnosis from physical signs. An electrocardiogram showing inversion of lead I and an exchange of position between leads II and III is pathognomonic of the true dextrocardia of complete transposition of the viscera. Observations made at operation and autopsy, particularly if supported by photographic records, cannot be gainsaid.

### *Complications of SIV*

The following brief discussion may provide clues as to the type of individual in whom one should suspect the possibility of SIV.

Kartagener[1] described a clinical triad since known as the Kartagener syndrome: SIV, sinusitis, and bronchiectasis. Adams

1. Kartagener, M.: Zur Pathogenese der Bronchiektasien; Bronchiektasien bei Situs viscerum inversus, Beitr. z. Klin. d. Tuberk. 83:489-501, 1933.

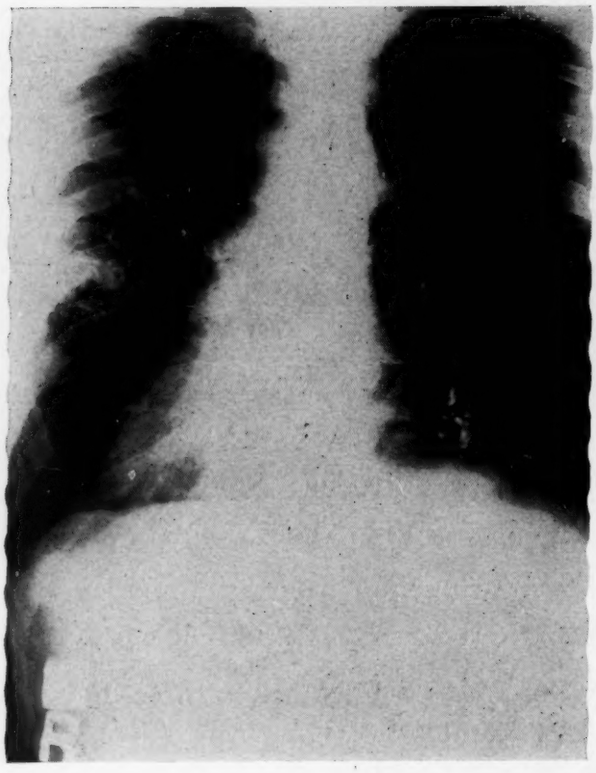

Fig. 3. (Case VIII) Kartagener syndrome. The ectatic bronchi are partially filled with lipiodol. The three lobed lung is here on the left.

and Churchill[2] reviewed the cases of bronchiectasis at the Massachusetts General Hospital and found the incidence of the disease higher in persons with SIV than in persons with situs solitus. In the author's collection of more than a dozen cases of SIV (table 1) there is one proven example of this syndrome (case VIII). A possible explanation for the supposed greater incidence of bronchiectasis in SIV is that an embryological pulmonic malformation predisposing to bronchial ectasia accompanies the transposed disposition of the viscera more frequently than the untransposed.

The causes of death in several hundred reported cases reviewed by the author are not confined to any system, organ, or tissue, and vary as widely as in the general population. A similar survey of the complaints bringing such patients to their physician (table 1) fails to demonstrate any peculiar susceptibility to disease. However, the condition is accompanied frequently by additional congenital anatomical abnormalities, such as congenital heart disease, cryptorchidism, splenic and renal anomalies, and malformations of ectodermal derivatives.

If it be true that 70 per cent of vertex deliveries are LOA for anatomical reasons (the fetal occiput being in the left anterior quadrant of the maternal pelvis because the uterus undergoes torsion toward the right, owing to the presence of the sigmoid colon in the mother's left side), one should expect predominance of ROA deliveries in women with SIV. Thus, on examination of a pregnant woman with SIV, sinistrotorsion of the uterus should be anticipated.

### *Military Importance*

Most of the surgical emergencies of civilian life, and in addition emergencies and operative conditions peculiar to military surgery, may confront the medical officers of the armed forces. There may be no time for preliminary physical examinations merely for the sake of determining gross anatomical peculiarities. Nevertheless, "while transposition of the viscera may have no prejudicial effect upon the life and health of the individual it may prove an awkward complication in surgical procedures. It is easy, for instance, to understand how the success of a colotomy (for intestinal obstruction) might be imperilled by its non-recognition by the operator. In the performance of an esophagotomy, of paracentesis thoracis, and of operations on the liver, gall-bladder, stomach, pylorus, and spleen, the presence of situs inversus would necessitate changes in the mode of procedure."[3] Consequently men with SIV should be discovered by physicians examining them for military service; they should be informed of their condition, and should receive some distinguishing mark, so that if they are rendered incapable of communicating their condition to a surgeon, their visceral situs may be instantly recognized in time of peril.

The importance of the above statement is emphasized by the report of difficulties encountered at operation by surgeons in civilian practice who have failed to discover the visceral transposition. A number of cholecystic and appendiceal operations have been reported in which a wrong-sided incision was made before the unusual position of the affected organ was diagnosed. If such mistakes have occurred in normal times without the pressure of accumulating casualties demand-

2. Adams, R. and Churchill, E. D.: Situs Inversus, Sinusitis, Bronchiectasis; Report of 5 Cases Including Frequency Statistics. J. Thoracic Surg. 7:206-217 (Dec.) 1937.

3. Ballantyne, J. W.: Manual of Antenatal Pathology and Hygiene, New York, William Wood & Co. 1905, xix and 679 pages.

TABLE 1

| Case No. | Age | Sex | Race | Complaint | Proof of SIV | Complication | Handedness |
|---|---|---|---|---|---|---|---|
| I | 27 | m | Scotch-Canadian | pneumonia | x-ray & EKG | | right |
| II | 37 | f | Italian-Canadian | rheumatic fever | x-ray & EKG | | right |
| IV | 10 | f | Scotch-Canadian | sinusitis | x-ray & EKG | | left |
| (Dr. J. G. Monroe, Montreal) | | | | | | | |
| VII | 29 | m | Italian-Canadian | rheumatic fever | x-ray & EKG | | right |
| (Dr. H. N. Segall, Montreal) | | | | | | | |
| VIII | 29 | m | Swedish-Canadian | suspected tuberculosis | x-ray & EKG | sinusitis and bronchiectasis | right |
| XI | 41 | f | American | appendicitis | x-ray | subacute bacterial endocarditis | right |
| (Dr. J. P. Rousseau, Winston-Salem) | | | | | | | |
| XII | 43 | f | American | abdominal tumor | x-ray & EKG | congestive failure | right |
| (Dr. C. L. Haywood, Jr., Elkin) | | | | | | | |
| XIII | 6 | f | American | tonsillitis | x-ray | | right |
| (Dr. C. L. Haywood, Jr., Elkin) | | | | | | | |
| XV | 44 | m | American | tuberculosis | x-ray | | right |
| (Dr. P. A. Yoder, Winston-Salem) | | | | | | | |
| XVI | 26 | f | American | suspected tuberculosis | x-ray | | right |
| (Dr. P. A. Yoder, Winston-Salem) | | | | | | | |

ing emergency treatment, how much more likely it is that the mistakes will occur in military surgery during warfare!

It cannot be argued that the likelihood of encountering a person with SIV is so remote that this discussion has no real bearing on the present situation. Actually the frequency of SIV has not been satisfactorily established. Note the inconsistencies in the following figures:

| | | |
|---|---|---|
| 1889 | Gruenfeld[4] | 1:10,000 army recruits |
| 1906 | McCrae[5] | 1: 2,000 autopsies |
| 1922 | Sherk[6] | 1:34,700 Mayo Clinic patients |
| 1925 | LeWald[7] | 1:35,000 recruits (physicals) |
| | idem | 1: 5,000 recruits (x-rays) |
| 1926 | Cleveland[8] | 1:10,000 anatomy dissections |
| 1928 | Mandlestam and Reinberg[9] | 1: 1,230 |
| 1930 | Roesler[10] | 1: 7,467 |

The present author collected a series of 10 cases from a city of 800,000 during the course of three years, and, thanks to the active cooperation of colleagues in North Carolina (with a population of about four million), has added another ten cases in three months. It seems inconceivable that such a record would be possible if the condition were as rare as Sherk has estimated. On the other hand, if McCrae's calculation (1:2000) be correct, SIV is a congenital anomaly of distinct military importance.

4. Gruenfeld, Eugen: Ein Fall von Dextriocardie, Prag. Med. Wchnschr. 14:2, 1889.
5. McCrae, John: A Case of Congenital Atresia of the Pulmonary Artery, J. Anat. 40:28-33, 1906.
6. Sherk, H. H.: Total Transposition of Viscera, Surg., Gynec. & Obstet. 35:53-57 (July) 1922.
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*Conclusion*

The mirror-image disposition of the viscera, known as situs inversus viscerum, although not a common finding in routine physical examinations, is not as rare as it is ordinarily believed to be. Because its nonrecognition in time of surgical emergency would imperil the life of the affected persons, it is a condition which should be correctly diagnosed and labelled by physicians, especially those entrusted with the examination of candidates for the armed forces.

**Editor's Note:**

Dr. Bauer has expressed his willingness to consult with any North Carolina physician who has a case proven or suspected of being SIV, and he would welcome the opportunity of studying additional cases of this condition from the hereditary viewpoint. Proper recognition will be given those who permit him to add their cases to his series.

**The discovery of a primary infection in a child** should not condemn it to a life of chronic invalidism, but should lead to the examination of its contacts with the expectation of the discovery of a source of infection, the successful handling of which will protect the child from any consequences of its infection, and possibly save the life and health of many other persons. G. A. M. Hall, M.D., British Jour. of Tuber., July-Oct., 1941.

# THE USE OF SLOWLY ABSORBABLE MORPHINE IN THE TREATMENT OF ADDICTION

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GREENSBORO

Opium has been known and some of its important properties have been recognized since earliest antiquity. It is one of the few drugs which combine a highly necessary therapeutic effect with a vicious tendency to addiction. The high therapeutic effect makes opium and its alkaloids of great value to the profession. The vicious tendency to habit formation has been responsible for its misuse by the multitudes of unfortunates who hold this drug between themselves and reality.

The treatment of morphinism or opium addiction is divided into two parts. First, there is the withdrawal of the drug from the victim. Second, there is the prolonged period of rehabilitation or convalescence to make the patient fit to enter society again. Both of these phases are very important. If either is not carried out carefully, the treatment is sure to fail.

This paper deals with the first, or withdrawal part of the treatment. A new combination of morphine acetate in a glycerogelatinous base has been used with considerable success. The preparation is slowly absorbable and its effect is prolonged over a period of from fifteen to twenty hours. It does away with the "lift" that the addicts look forward to, and eliminates the period of "let down" that they all fear four to five hours after injection. The number of needle punctures is reduced considerably, and the so-called "needle habit" is partially done away with in this manner. The use of such a preparation is based on the same principle as that of protamine zinc insulin in the treatment of diabetes. A patient on gradual morphine reduction treatment receives a more constantly diminishing amount of morphine than is the case when regular morphine sulfate is used.

This slowly absorbable morphine has worked equally as efficiently when used in conjunction with a modified Lambert treatment. When it is used in this manner, patients may be taken off morphine sulfate with comparatively little suffering in four to five days' time.

The drug has been used for the past year and a half at Glenwood Park Sanitarium on fifty-two addicts. The average time that the effects of the drug could be felt by the patients was sixteen hours, with a variation of from ten to twenty hours. There have been no toxic effects other than that of morphine itself. No abscesses have been caused by its injection.

Slowly absorbable morphine has been used for other conditions in which prolonged narcosis is desired, with favorable results; but as yet sufficient data have not been accumulated.

At this particular time it is believed that such a preparation could be used to advantage by the Army. A soldier wounded at the front might be spared the shocking and possibly fatal effects of the ride back to a base hospital by the prolonged action of this slowly absorbed morphine. For soldiers who have been subjected to surgery, the use of this preparation would afford prolonged comfort that might otherwise be impossible during an emergency.

Morphine acetate in glycerogelatinous base is a gel at ordinary temperatures. It must be warmed before being used. It may be injected with a twenty-four gauge needle. The dose for non-addicts is twice the regular dose of morphine. In addicts the dose, of course, depends on the individual. This preparation is as yet not on the market.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

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**Improvement in Diabetes.** — Failure to recognize that diabetes can improve and grow milder is a definite hazard. It is almost as serious as failure to recognize that it can grow worse. In one case the failure may lead to an insulin reaction, and in the other to diabetic coma. There are so many mild diabetic patients today who do improve, and such a considerable percentage who by living faithful dietetic lives and taking proper exercise could give up their insulin safely, that it is a shame not to recognize their improvement and enable them to do so.—Elliott P. Joslin: Diabetic Hazards, New England J. Med. 224:591 (April 3) 1941 .

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**The Danger of Neglecting the Toes in Diabetic Patients.**—I do not dare to look up how much of the free-bed money for diabetic patients in the New England Deaconess Hospital is spent on neglected toes, but I venture to say that the charity money devoted to the toes of elderly diabetic patients is five times that expended on diabetic patients in their teens. — Elliott P. Joslin: Diabetic Hazards, New England J. Med. 224:592 (April 3) 1941.

# DUODENAL DIVERTICULA

DAVID CAYER, M. D.

*and*

GEORGE BAYLIN, M. D.

Diverticula of the duodenum, although not rare, cannot be diagnosed without the help of the x-ray. The first recorded roentgen diagnosis was made by Case[1] in 1913. Since that time, there has developed a voluminous literature on the subject. The significance of duodenal diverticula has been the source of considerable difference of opinion.

## *Incidence*

It is difficult to estimate the frequency of duodenal diverticula. The incidence varies with the age of the group studied. Grant[2], working with dissecting room specimens, and carefully preparing the gut with paraffin, found that diverticula occurred in 1 out of 25 persons 52 years of age and under, and 1 out of 6 persons over 52 years of age. Various x-ray surveys of patients of all ages reveal duodenal diverticula in an average of 2.5 per cent. When it is realized that even at autopsy diverticula are sometimes found only after exacting search, this apparently wide discrepancy is more easily understood.

## *Symptoms*

The history may simulate that of ulcer, carcinoma, colitis, or disease of the biliary tract or pancreatic tract. The most frequent complaints are flatulence, distention, epigastric pain and heart burn following meals. These vague complaints may be due to the retention of food in a diverticulum whose deficient musculature cannot empty it. Pain may be a sign of inflammation within the pouch. More serious complications may occur. Acute perforations have been described by several authors, and are usually diagnosed as perforating ulcer, acute appendicitis, or acute cholecystitis. Lucinian[3] described an instance of perforation into the pancreas which was diagnosed pre-operatively by x-ray, with subsequent recovery. Obstruction may occur. Finney[4] believes that the formation of scar tissue in the bowel, through repeated infections extending from the diverticulum into the wall of the intestine, is the cause of obstructions. Primary carcinoma in a diverticulum of the duodenum has been reported.

## *Pathology*

Most duodenal diverticula are mucosal sacs which have herniated through the circular and longitudinal musculature and are devoid of a true muscle coat; less frequently they involve all the layers of the gut wall. The first group has been classified by Odgers[5] as the primary type and the greatest number of these are found in the second, third, and fourth portions of the duodenum, located almost exclusively within the duodenal loop along the mesenteric border. They connect with the bowel by a narrow neck. Spriggs and Marxer[6] and Weintraub and Tuggle[7] report the occasional finding of a diverticulum on the concave border of the duodenum. The other group, or the secondary type, almost invariably occurs in the first portion of the duodenum and is associated with duodenal ulcers or periduodenal adhesions. Wierig[8] reports instances of this type in the third portion which are due to gallbladder adhesions producing traction on the bowel wall.

While the origin of the secondary group is readily understood, there is considerable difference of opinion regarding the etiology of primary diverticula. Intraduodenal pressure and weak areas in the bowel wall, particularly at the points of entrance and exit of the blood vessels, have been described as factors. Linsmayer[9] and Horton and Mueller[10], having found pancreatic tissue in the bowel wall of diverticula, maintain that this aberrant tissue produces a weakness which eventually permits herniation to occur. It has been suggested that an atrophic pancreas may produce a herniation by trac-

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tion. Keith[11] suggested that traction by the common duct may pull out the duodenal wall. Recent writers regard primary diverticula as congenital in origin. Nagel[12] states that, regardless of when or why diverticula appear, they always occur at congenital weak points in the bowel. In support of this theory are the facts that diverticula frequently are multiple and that they often co-exist with abnormalities elsewhere; that they are occasionally found in infants; and that, as Keibel and Mall[13] point out, the duodenal epithelium exhibits extraordinary activity, proliferating so rapidly that weak areas are produced in the wall of the gut.

### *Diagnosis*

The diagnosis can be established only by the use of the opaque meal. The diverticulum is recognized as a small or large barium-filled pocket connected with the lumen of the gut by a short, narrow neck. Rarely is there any definite mucosal pattern within the diverticulum itself, and there is usually an abrupt change from the normal duodenal pattern to a linear pattern at the neck of the pouch. This feature, indeed, is helpful in distinguishing the lesion from a benign or malignant ulceration. It must be emphasized that the recognition of diverticula depends on the care with which the examination is conducted, and the frequency with which the radiologist discovers them is an indication of his thoroughness. A diverticulum which fills on one occasion may fail to fill at a subsequent examination, but frequent examinations will eventually again demonstrate its presence. The presence of diverticula can not be assumed to explain a patient's symptoms until the size, shape, position and mobility of the pouch, and the relation of the shadow to tenderness on palpation have been noted. One must demonstrate, furthermore, definite radiographic changes in the duodenum: stasis in the loop, tenderness over the pouch, or an actual defect within the diverticulum. In several patients where these conditions were met further examination revealed other conditions which explained the symptoms. Among these were early cardiac failure, pernicious anemia and diabetes. In these cases specific treatment was followed by improvement. In the 40 patients we have studied, gallbladder series were negative and gastrointestinal series failed to reveal any other intestinal disease, but in only 4 (10 per cent) could the diverticula which had been demonstrated be considered as the prime cause of symptoms.

### *Treatment*

The absence of symptoms, or the finding of a duodenal diverticulum associated with an atypical clinical picture, frequently is confusing, and the treatment of patients in whom diverticula have been found may present a difficult problem. The frequency of the occurrence of diverticula without symptoms must be borne in mind, as well as possible complications. In an attempt to evaluate the significance of duodenal diverticula and to outline an effective form of therapy, we have reviewed the clinical courses of 40 patients in whom diverticula were found. Of these, 16 were males, and 24 were females. The average age was 51 years; the youngest patient was 28, the oldest 72. The most frequent symptoms were pain, usually in the right upper quadrant; gaseous distention; anorexia; nausea and vomiting. Nine patients noted the onset of symptoms one-half hour after meals; 5 stated that symptoms were relieved by food; and the others noted no relationship to food. Diagnosis before x-ray examination was peptic ulcer in 7 cases, chronic cholecystitis in 6, gastric neurosis in 5 and carcinoma of the stomach in 3.

Where symptoms are mild and the outpouchings small, medical treatment consisting of rest and a bland diet, with the avoidance of large meals—the usual ulcer regimen—is of value. Massage over the site of the diverticulum is said to be of use, but this is doubtful. Surgery is indicated when the diverticulum is large and produces persistent symptoms, or when any of the aforementioned complications occur. Lahey[14], while stating that surgery is usually necessary for accumulations or ulcerations within the sacs, warns that diverticula arising from the posterior wall and burrowing into the vascular structures and the head of the pancreas "are dissected with great difficulty, and often at unjustifiable hazard." Moreover, the fact that we are often dealing with individuals in the sixth decade calls for an adequate trial of a medical regimen.

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*Summary*

The exact diagnosis of duodenal diverticula can be made only by x-ray studies. The evaluation of x-ray findings must include careful fluoroscopic study, as well as a thorough medical survey, to exclude the metabolic and organic disorders so frequently present at the ages when diverticula are most common. In the absence of complications treatment is purely medical.

## ESSENTIAL DRUGS FOR THE PHYSICIAN'S BAG

GEORGE T. HARRELL, JR., M. D.

WINSTON-SALEM

The science of medicine has become so complex that we are prone to forget that the greatest demands on the doctor's time are made by patients with relatively minor complaints. A recent survey published in the JOURNAL of this Society showed that 85 per cent of patients can be cared for with the contents of an ordinary professional bag[1]. This statement presupposed that common diagnostic instruments (thermometer, blood pressure manometer, stethoscope, ophthalmoscope, otoscope, tongue depressors, reflex hammer, flashlight, and rubber gloves) were carried, and that a few simple diagnostic aids (glass slides, blood counting pipette and diluting fluid, Loeffler's culture media, and Wassermann tubes) and simple therapeutic aids (2 cc. hypodermic syringe, 10 or 20 cc. syringe for intravenous injections, needles, tourniquet, 13 or 14-gauge bleeding needle, catheter, stomach tube, cotton, and suture material on needles) were available.

A few drugs are necessary for specific uses. These include tincture of iodine, metaphen, or merthiolate for antisepsis of small surface wounds, or, diluted with water, for use on mucous membranes; 70 per cent alcohol; mercuric chloride tablets; 1 per cent silver nitrate solution for prophylaxis of ophthalmia neonatorum; 1 per cent solution of homatropine hydrobromide for dilatation of the pupil; and 1 per cent solution of procaine with .001 per cent epinephrine for local anesthesia.

Presented before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

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1. Editorial, North Carolina M. J. 1:320 (June) 1940.

A relatively small number of drugs, properly used, will suffice to treat adequately most minor symptoms and to meet most medical emergencies. Few places in North Carolina are more than an hour or so by car from a pharmacist, and such a delay will rarely endanger life; hence, we need not consider as necessary for the physician's bag the multiplicity of drugs on the pharmacist's shelves or in his refrigerator.

The physician must be prepared to administer emergency measures at once. Some emergencies are best cared for in a hospital, but temporary measures can be instituted wherever the patient is first seen. In acute cardiac failure, as in other medical emergencies, the most valuable drug is morphine. Used adequately it will allay dyspnea and pain, but more important still, will dispel anxiety and give rest. This may be conveniently carried as a 1 per cent solution in a rubber-diaphragm-stoppered bottle, as well as in the familiar tablets. Salyrgan with theophylline given intravenously to stimulate diuresis will contribute to the comfort of those in chronic cardiac failure. Theophylline with ethylenediamine (aminophylline) *slowly* given intravenously may relieve paroxysmal nocturnal dyspnea through improvement of the coronary circulation and relaxation of the bronchi. Nitroglycerine under the tongue or under the skin will relieve the distress of angina and may help to relieve the spasm accompanying occlusion of a coronary artery. The margin of safety is very wide and the dose may be repeated frequently over a long period. Digitalis rarely has to be given so rapidly that intravenous injection is necessary. The quantity required for intravenous injection—10 to 15 cat units—is large and is unnecessarily expensive. In acute cardiac failure with pulmonary edema, the withdrawal of 500 to 600 cc. of blood is more helpful than any drug. If rapid digitalization is still imperative and it is known that the patient has had no digitalis in the preceding two weeks, intravenously administered purified glucosides of Strophanthus kombe' (strophanthin-K) would be the drug of choice. Standardization is not as accurate as we would desire, but this drug may prove life-saving.

In cases of shock the single most helpful procedure is a transfusion of whole blood. This is impractical as an emergency measure in the home, but it is now possible to obtain

the next best substitute—human plasma—prepared by the lyophile process, stable at ordinary temperatures, and requiring only the addition of sterile water. This product is expensive at present, but certainly by the close of the war will be within the reach of the average patient. Fluid in any form, such as glucose in saline or Ringer's solution, will do. This is cheap and is readily available in vacuum packed disposable glass containers which can be carried in the car for weeks without deterioration and can be given in the home in a matter of minutes. Evidence of the value of the highly advertised circulatory stimulants in shock has not been convincing. Epinephrine is contraindicated, since its action—contraction of the terminal arterioles—will further impair circulation in the periphery and will not correct the true fault, loss of circulating blood volume. The heart has already been adequately stimulated by the failure of the circulation.

For the relief of the respiratory distress of allergic bronchial asthma use epinephrine carried as the aqueous solution in a rubber-diaphragm-stoppered bottle for rapid action, and suspended in oil for prolonged relief. When the efficacy of this drug has been temporarily exhausted, aminophylline intravenously may be effective. Morphine should never be used, since it depresses respiration. For stimulation of the respiratory center which has been previously depressed by drugs such as morphine or the barbiturates, coramine or metrazol intravenously or subcutaneously or caffeine with sodium benzoate by the latter route may be helpful. These drugs in ordinary dosage are without effect on a medulla not depressed by drugs.

Convulsions or manias due to psychic disturbances are usually controllable by the intravenous injection of a soluble barbiturate such as sodium amytal in doses of 0.25 to 0.50 Gm. (4 to 7½ grains). For milder sedation phenobarbital by mouth is a cheap and satisfactory preparation; this should always be given before a local anesthetic is injected, to prevent overstimulation of the medulla. Paraldehyde is an effective though unpleasant drug which may be given intravenously, slowly, in 3 to 5 cc. doses, as well as by mouth or rectum.

The relief of pain or colic is one of the most frequent problems the physician encounters. For mild pain aspirin is the safest and cheapest analgesic. The hypnotics, such as the barbiturates, offer no relief of pain, but may make pain-relieving drugs more effective. Codeine has little power to induce rest, but allays pain. The maximum effect is obtained by the use of 64 mg. (1 grain), which is roughly equivalent to 10 mg. (1/6 grain) of morphine; further increase in dose is wasted. Morphine is most satisfactory for the relief of pain, and the more expensive derivatives and synthetics have few, if any, additional virtues. For the severe pain of embolism or coronary thrombosis it may be necessary to give 32 mg. (½ grain) of morphine, but great care must be exercised to prevent late respiratory depression. Morphine contracts most smooth muscle, and though it may block the appreciation of pain by the brain, it may aggravate the local cause of pain. The pressure in the biliary tract behind a stone will be raised by morphine; relieve this by nitroglycerine simultaneously given. The spasm around a ureteral calculus will be increased, but the addition of atropine will relax this and aid in the passage of the stone. A much neglected drug which is almost specific for relaxation of smooth muscle is papaverine. This has none of the depressant characteristics of other opium derivatives, and although usually used in doses comparable to that of codeine, may be given in quantities as great as 120 mg. (2 grains) intravenously. Occasionally scopolamine (hyoscine) is effective as a hypnotic when other drugs are not.

In obstetrical emergencies sedation and replacement of blood loss follow the principles outlined. Some obstetricians prefer magnesium sulfate as a parenterally administered anticonvulsant. Of the drugs with strong oxytocic action the injectable salt of the alkaloid ergonovine (ergotrate-H) is probably the best for routine use, although posterior pituitary extract is more rapid in action in postpartum hemorrhage. Posterior pituitary extract may also be used, after insertion of a rectal tube, to overcome the distention of paralytic ileus after delivery or operation or during acute infections, although prostigmine methylsulfate, 0.5 mg. (1 cc. 1:2000 solution) subcutaneously, causes less severe cramps and maintains better tone.

In surgical emergencies mechanical measures—tourniquets, sutures, duodenal intubation, and splints (which can now be carried easily in the car as prepared dry bandages)

—are as useful as drugs. Fluids for parenteral use are invaluable. The routine use of powdered sulfonamide compounds locally in wounds is not justified in the present state of our knowledge. Fresh burns may be treated locally with a freshly prepared 10 per cent solution of tannic acid, sprayed with a mixed aqueous solution of 2 per cent gentian violet, 1 per cent brilliant green and 0.1 per cent acriflavine, or covered with 50 per cent codliver oil ointment in white petrolatum. Recent experiments with powdered sulfonamides suspended in a disappearing cream base and with a spray of 3 per cent sulfadiazine in 8 per cent triethanolamine may prove these methods to be better.

Potassium permanganate crystals in tablets of 0.23 Gm. (3½ grains) when dissolved in one quart of water make a 1:4000 solution which is useful in lavage of the stomach in poisoning due to ingested organic compounds. Eggs and milk are available in the home for the treatment of other poisons. Permanganate crystals may be applied locally to snake bite. In the treatment of medullary depression due to poisoning by hypnotics, strychnine may be used—and this is its only justifiable use—, although picrotoxin is a better agent. The latter should be used under close supervision, preferably in a hospital. Calcium chloride or gluconate, 10 to 20 cc., in 10 per cent solution for intravenous use is reported to stop the pain of black widow spider bites and may relieve the colic of biliary or renal stone.

Diabetic coma should be treated in a hospital; hence, insulin is rarely needed in the home. It should not be given without testing the urine, and this would require the use of Benedict's solution or of the newer powdered reagents such as galatest or the clinitest tablets.

In summarizing, there are nine essential drugs which the physician should always have in his bag and with which he can adequately handle at least 85 per cent of his calls, including emergencies. These are: morphine, atropine, nitroglycerine, epinephrine, aspirin, phenobarbital, sodium amytal, posterior pituitary extract, and an antiseptic solution. The most helpful agent he can carry in addition to these drugs is fluid for intravenous administration, preferably 5 per cent glucose solution in saline. The addition of other drugs would depend on the type of practice and the availability of a source of supply.

## THE INJECTION TREATMENT OF CERTAIN CONDITIONS IN GENERAL PRACTICE

W. J. LACKEY, M. D.

FALLSTON

The injection treatment or sclerosing therapy of certain conditions in general practice is scientific, inexpensive, and safe; and above all, it is liked by the patient. Any good general practitioner can treat many conditions in his practice by this method of therapy, which is carried out in the physician's office. There is no necessity for hospitalization and no hospital bills to pay. The patient is saved the fear of the surgeon's knife and does not lose time from work.

Many good medical men do not believe in treating certain conditions by the injection or sclerosing method. Their objections to this method of treatment are probably due to the fact that inexperienced and unethical practitioners and quacks have employed it unwisely in many conditions.

The injection treatment of internal hemorrhoids was originated by Dr. Mitchell in 1871. He did not publish his formula or technique, but instead sold the secret to anyone who had money enough to pay for it. Some were not even medical men. Naturally disastrous results followed and the method was not adopted by the medical profession.

The treatment of varicose veins by injection goes back as far as 1851. Pravaz, who invented the hypodermic syringe, was the first man to inject varicose veins. Lack of knowledge and the use of too strong sclerosing solutions caused many bad results, and this method was not accepted by the medical profession in general until a few years ago. All of these unfortunate incidents have caused many medical men to be skeptical of this therapy. I believe that most physicians today will agree that the injection treatment of varicose veins is simpler than the previous surgical resection, but many of these same men still do not employ sclerosing therapy for hydrocele, internal hemorrhoids, ganglion, and other conditions. Many such cases can be treated by this method with as good results as could be obtained by surgery, if not better. Today many leading clinics are

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using the injection method with excellent results. The cases should be selected, of course, and when surgery is indicated it should certainly be advised.

The procedures followed in the injection treatment are simple. Any good general practitioner can readily acquire the technique. A short postgraduate course is advisable. Time does not permit me to discuss all of the conditions suitable for this type of therapy, but I will discuss briefly some of the common conditions we see in our practice.

### *Varicose Veins*

The sclerosing therapy of varicose veins is well recognized by the medical profession. Various techniques are employed. It is safer to test the deep circulation, but rarely will you find a patient who does not have enough deep circulation to render injection treatment of the superficial veins safe. Of course, if there is an acute phlebitis of either the deep or the superficial veins, no injection should be made until this condition is cleared up. If the patient gives a history of an attack of thrombophlebitis it is especially wise to test the circulation before carrying out the treatment. In most cases, however, the superficial veins can be injected, using a small amount of fluid at each injection, with no untoward results. Systemic diseases such as diabetes and hyperthyroidism should be controlled before injections are made. Large abdominal tumors should be removed before treating the veins, in order to relieve the pressure on the veins. Varicose ulcer of the leg is no contraindication to injection treatment. There is some controversy as to the advisability of injecting veins during pregnancy. If the veins are causing much discomfort it is probably advisable to inject them any time during the first seven months, provided no sclerosing solution containing quinine is used.

Many solutions may be used in the treatment of varicose veins, the most popular ones being sodium morrhuate and quinine-urethane. The patient may lie down, sit down, or stand up while the solution is injected into the veins. No elaborate equipment is necessary, and some men do not consider it necessary to use a tourniquet. In some cases it is better to ligate the great saphenous vein before beginning injection therapy. Usually only one place is injected at a time, and injections are given at one to two week intervals.

I usually have the patient stand or sit, and I apply a tourniquet above the site where the injection is to be made. A 10 cc. syringe with a 23 gauge needle is used. The skin is sterilized with any good antiseptic and the needle is inserted into the vein. The plunger is withdrawn, and if blood comes back into the syringe I know that the needle is in the vein. Then the solution is slowly injected. I use about 5 to 10 cc. of 5 per cent sodium morrhuate solution or 1 to 3 cc. of quinine urethane (Parke-Davis). The amount depends on the size of the vein. Just as soon as the needle is withdrawn a dressing of gauze is applied over the needle puncture and adhesive is tightly pulled over the gauze. This dressing is left on for an hour or so to prevent leakage of fluid from the vein. Some physicians bandage the entire leg with elastic bandage. I do not think this makes any difference in the results. The patient is told to continue with his work.

The small hair-like veins or "spider bursts", which usually give no symptoms but which may be treated for cosmetic reasons, are injected by using a very fine needle (26 or 27 gauge). Since it is easy to get the needle out of these veins into the subcutaneous tissue, it is better to use 5 per cent sodium morrhuate solution. This will not cause a slough, whereas quinine urethane injected into the subcutaneous tissue almost always results in a slough. These small veins require only a very small amount of fluid.

### *Hydrocele*

The acute types of hydrocele, with inflammation and edema of the tissue, should not be treated by this method. Many of the chronic hydroceles, especially the chronic idiopathic types, can be successfully treated by the injection method, and the patient can continue with his work. There are several sclerosing solutions that may be used, the most popular ones being 5 per cent sodium morrhuate solution, quinine-urethane solution (Parke-Davis) and 5 per cent phenol in equal parts of glycerine and water[1]. The fluid is aspirated from the hydrocele in the usual aseptic manner, using a large size needle—about 18 gauge—after first making a wheal with novocain to desensitize the area. Then another syringe containing the sclerosing solution is attached to the needle

1. Goldbacher, Lawrence: The Injection Treatment of Hernia and Hydrocele, Philadelphia, L. Aubrook & Co., 1938.

while it is still in the sac and this solution is injected directly into the hydrocele. The amount of solution depends upon the kind used and the size of the hydrocele. With 5 per cent sodium morrhuate solution usually 5 to 10 cc. are injected; with quinine urethane only 1 to 3 cc. are necessary. On the average one should inject about one tenth the amount of the fluid aspirated from the hydrocele if phenol in equal parts of glycerine and water are used.

There is practically no pain during this procedure, and after some support, such as a suspensory bandage, is applied to the scrotum, the patient is permitted to go home. For a few days after the treatment one can expect some tenderness and slight swelling of the scrotum, which soon subsides. Occasionally aspirin or codeine may be necessary for the first day or so, but often no analgesics are required and the patient remains ambulatory. He should be told what to expect. Sometimes more fluid will appear during this first phase of the treatment. This should be aspirated. In around three or four weeks another injection may be made if the fluid continues to collect. Many times one injection brings about a cure. Rarely is it necessary to give more than two or three. If this method of therapy fails, surgery can still be employed.

Occasionally a patient will have a reaction from the sodium morrhuate solution or the quinine preparation. A history of quinine sensitiveness should lead the physician to use some other solution, and the patient's sensitivity to the morrhuate solution can be tested by injecting a small amount in a vein in the leg a few days before treating the hydrocele. No sensitivity to the phenol preparation has ever been heard of.

### *Varicocele*

A varicocele usually causes no symptoms and needs no treatment. In some cases where the varicocele is very large, however, or in neurotic patients the condition may cause worry and may be treated by the sclerosing method. This is done in the same manner that varicose veins are treated. About 1 to 3 cc. of either 5 per cent sodium morrhuate or quinine urethane is injected into the veins. Usually one injection is sufficient. A suspensory bandage is advised for several weeks.

### *Internal Hemorrhoids*

A good many of our patients have "piles that come down." We should not get internal hemorrhoids which are prolapsed to the outside confused with external hemorrhoids. Internal hemorrhoids are covered with mucous membrane; external piles are covered with skin. The treatment of internal hemorrhoids depends on the size and degree of prolapse, but many cases can be cured by injection. Some surgeons say that all cases should have surgery. The injection treatment is appropriate for many cases; it can be done by the general practitioner, and is as scientific as the treatment of varicose veins elsewhere. Recurrences occur once in a while; but injections can be repeated, and if necessary surgery can be done later. Recurrences following surgery also occur. The injection treatment is practically painless and there is almost no danger if it is done right.

Among the most popular solutions used is 5 per cent phenol in almond oil or compressed cotton-seed oil. Quinine-and-urea hydrochloride has its advocates. These solutions are not injected into the veins, but outside of the veins in the submucous tissue of the hemorrhoidal mass. Almost any kind of anoscope can be used. With the patient in the left lateral Sims' position and with proper light the hemorrhoids are brought into view with the anoscope. The needle is inserted into the hemorrhoidal area under the mucous membrane, and before injection is started the plunger is pulled back. If any blood is drawn into the syringe the needle must be withdrawn and reinserted. When the injection is started the hemorrhoidal mass will immediately bulge. There should be no blanching of the overlying mucous membrane; if there is, the injection must be stopped, for this means that we are injecting into the mucous membrane, and a slough may result. With phenolized oil usually 3 to 8 cc. of the solution is injected into one hemorrhoidal mass, depending upon the size. With quinine-and-urea hydrochloride usually 1 or 2 cc. is sufficient. It is better to inject one hemorrhoid at a time, at weekly intervals, until the treatment is completed. Four or five injections are necessary, depending upon the number of hemorrhoids present. No other local treatment is necessary and the patient can continue with his work.

### *Pruritis Ani*

Pruritis ani is a tormenting condition. In many cases the cause cannot be determined. Total disability over a long period is not uncommon. Patients sleep fitfully, awake scratching, and may lose weight from worry and loss of sleep. Diabetes should be ruled out, and skin diseases such as fungus infections should be treated with suitable germicides. The many cases in which no cause can be found we have to treat empirically. Excellent results from injecting alcohol under the skin around the anus are being reported. Buie[2] reports good success with this treatment. Its disadvantages are that the patients have to be hospitalized for a week or so, and the treatment is painful. X-ray has been used with success by some. Others inject with distilled water and many other liquids. Injections with an anesthetic oil, such as Morgan's solution[3], afford relief in many cases. These are given with the patient either on a rectal table or in a lateral Sims' position, lying on the left side with the left arm at the back, the right leg flexed and the left leg partly flexed. Either a head light or an ordinary floor light is sufficient. The patient uses his right hand to pull up on the right buttock to help give good exposure. A 10 or 20 cc. syringe with a 20 gauge needle is used, and the needle is inserted at the outer border of the abnormal skin involved in the pruritis and is passed under the skin inward to within half an inch of the anus. No injection is made as the needle is being inserted. The injection of the oil begins as the needle is slowly withdrawn to the point of the insertion. The needle is not removed from the skin, but is again inserted in another direction, and more solution is injected in the same way. This is done until one side is injected in a fan like manner through only one needle puncture of the skin. Usually about 10 cc. is injected on one side; then the procedure is repeated on the other side of the anus. There is very little pain during this treatment and no local anesthetic is necessary. It is important not to inject the solution into the skin and not to inject too much solution in one place.

2. Buie, Louis A.: Practical Proctology, Philadelphia, W. B. Saunders Company, 1938.
3. Morgan's solution contains:

| | |
|---|---|
| Novocain | 1 Gm. |
| Butesin | 6 Gm. |
| Benzyl alcohol | 5 cc. |
| Almond oil q. s. | 100 cc. |

Abbott Laboratories make a similar solution, "Zylcain", in 5 cc. ampules.

Usually the patient will get instant relief from the itching and no repeat injections will be necessary; but if all the itching is not relieved within a week or ten days more solution may be injected into the areas where itching persists. Many patients get relief permanently from this treatment, but there may be a recurrence after several months or years. The treatment can then be repeated. This is an office procedure and the patient can continue with his daily work. Only occasionally is there a local reaction with swelling, and this may be cleared up by hot sitz baths and sulfanilamide by mouth for a few days.

Another treatment for pruritus ani that gives good results is the injection of 5 per cent phenol in equal parts of glycerine and water[4]. This solution is injected subcutaneously, the needle being inserted at the lateral edge of the external sphincter muscle on each side. The external sphincter can easily be located by the finger as a hard ridge around the anus. About 10 cc. of this solution is injected in a fan-like manner on both sides of the anus into the loose subcutaneous tissue. The patient should have no pain during the injection of the solution. If he does, the needle is inserted either too deeply or not deeply enough. When pain is felt the needle should be moved, allowing the solution to flow in easily. Calamine lotion is used locally and the patient is advised to keep the skin around the anus scrupulously clean. Cotton balls wet with some antiseptic solution such as 1-5000 potassium permanganate are good to use after each bowel movement. The patient is told that the itching will soon stop and that he must put on gloves at night if necessary to prevent scratching when he is asleep. A well-balanced diet, plenty of rest and sleep, and freedom from worry are important in getting a cure. Frequently a sedative is advised.

### *Ganglion*

The skin over the ganglion is sterilized and a small wheal is produced with novocain. A large needle (18 gauge), attached to a 5 or 10 cc. syringe, is inserted into the cavity of the ganglion and the contents are aspirated. Then another syringe containing from 1 to 5 cc. of 5 per cent sodium morrhuate solution is attached to the needle and the

4. Goldbacher, Lawrence: Rectal Diseases in Office Practice, Philadelphia, L. Aubrook & Co., 1936.

fluid is injected into the cavity. The solution is withdrawn and reinjected into the sac, this procedure being repeated about four times or until the walls of the sac are thoroughly washed. A small amount, 1 to 2 cc., is left in the sac, and the needle is withdrawn. If the fluid is cloudy after washing the walls of the sac, some fresh fluid can be injected by attaching another syringe. Most cases require only one treatment. Occasionally two or three treatments may be necessary.

### *Conclusion*

The injection treatment is an inexpensive scientific, and safe method of therapy if used in selected cases. The procedures are simple and the results pleasing.

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## BROMIDE THERAPY AND INTOXICATION

ROBERT L. GARRARD, M. D.

GREENSBORO

Bromides are a valuable aid in the management of tension states, anxiety, and insomnia. They have been extensively used in the treatment of epilepsy, although during recent years they have been replaced to a large extent by phenobarbital and dilantin. Bromides tend to irritate the gastric mucosa, and should therefore be diluted before administration. A blood level of around 125 mg. per 100 cc. of blood is considered about the upper limit of safety. This varies widely, however, so that some patients can tolerate 300 mg. or more with few signs of intoxication, while others show evidence of poisoning on less than 100 mg. per 100 cc. Blood level determinations should be made occasionally, so that the level will not exceed a toxic concentration. Wuth[1] was largely responsible for awakening interest in bromide intoxication in this country, and his procedure, devised about thirty years ago, is the most convenient means of quantitative estimation of bromides in the blood.

The high incidence of bromide intoxication has been due in large measure to the unrestricted sale of sodium bromide and of various preparations containing bromides, such as Elixir of Five Bromides, Peacock's Bromides, and pain-killers such as BC Powders, Stanback, Goodies, Bromo-Quinine Bromo-Seltzer and Bromidia. More than two hundred patent medicines contain bromides. In 1935 the American Association of Pharmacy stated that the number of prescriptions calling for bromides is exceeded only by those containing aspirin. Such prescriptions can be refilled, and this unfortunately leads to extensive self-medication. Bromide preparations are much used in the treatment of headaches, insomnia and symptoms incident to chronic alcoholism.

Solomon describes the pharmacological action of bromides as follows: "They depress the entire central nervous system with the exception of the medulla, depressing the psychic functions, the motor cortex and spinal cord, lowering its reflex excitability. The muscle tone is lowered throughout the entire body. Ordinary doses have no effect on the circulation, but larger doses depress the heart and vasoconstrictor center. They lessen arterial tension and lower body temperature, depress sexual appetite and power and cause pallor, acne on face and extremities, a coated tongue, disordered digestion, emaciation, somnolence, sluggish reflexes and defective coordination. They may be responsible for impairment of the mental faculties, with hallucinations and delusions, or cause melancholia or maniacal excitement."

Normally, there is very little bromide in the blood stream, the level varying between zero and 3 mg. per 100 cc. of blood[2]. Bromide is used in therapy because it depresses the nervous system.

A blood level above 150 mg. is termed by Wuth as the "toxic zone"; however, it is well known that some persons, otherwise healthy, seem to lack resistance and become delirious on a much lower concentration. A person using little or no salt will become intoxicated with greater ease. The older the patient, the greater is the danger of poisoning. A level of 300 mg. without symptoms is rare, regardless of age. According to Bernoulli, a replacement of over 40 per cent of the blood chlorides by bromides will prove fatal. Sharp states that bromides may be excreted in sweat, tears, mucus, urine, feces, semen and milk. The bromide in the tears probably causes conjunctivitis by irritation. Bromides are absorbed by the stomach and appear in the

1. Wuth, O.: Rational Bromide Treatment, J.A.M.A. 88: 2013-2017 (June 25) 1927.

2. Wikoff, H. L., Brunner, R. A., Allison, H. W.: The Normal Bromine Content of the Blood of Healthy Individuals, Am. J. Clin. Path. 10:234-237 (March) 1940.

urine within a few minutes. However, there may be no bromides in the urine even when a high level is present in the blood. Autopsy studies show that the heaviest concentration of bromides occurs in the cerebral cortex, lungs, and kidneys, being as high as .3 per cent to .5 per cent. Some workers[3] believe that the meningeal permeability to bromides is increased in cases of meningitis, central nervous system syphilis, arteriosclerosis, chronic alcoholism and diabetes, and is decreased in schizophrenia and epilepsy. The bromide level in the cerebrospinal fluid seldom equals the blood level, and bromides appear somewhat later in the cerebrospinal fluid than in the blood[4].

The clinical picture of bromide intoxication[5] is essentially an organic reaction type; however, the symptoms vary, depending upon the personality make-up of the patient. The patient is usually in an enfeebled state. The breath has a sweetish, fetid odor; the tongue is coated with thick brown fur, speech is thick and slurred; and ataxia and incoordination are usually present. The pupils are usually dilated and sluggish to light, but they may be small, unequal, irregular and sluggish to light. They react to accommodation. Such cases closely resemble general paresis. There is frequently tachycardia (120 to 140), and a fever of 100 to 103 F. The fever is usually due to dehydration, which is so often present. Reflexes are frequently hyperactive, although they may be sluggish or absent in severe cases. Loss of sphincter control may occur. Occasionally, a bromoderma[6] is present, and any sudden onset of acneform lesions should at once cause one to suspect bromoderma. This is especially true if there are no comedones. Apparently there is no direct relation between the presence of skin lesions and the blood bromide level, and there is no critical point at which the lesions will disappear. The one essential finding in a bromide delirium is disorientation. Memory impairment, dullness, fear, auditory and visual hallucinations, and ideas of persecution may or may not be included in the syndrome. Schilder[7] reports that in many cases of bromide intoxication, the patients experience visual hallucinations "at a distance".

I have reviewed all cases admitted to the State Hospital at Morganton, North Carolina, over a period of eighteen months, with special reference to bromidism. Between January 1, 1940, and June 30, 1941, a total of 1042 patients were admitted to the Hospital. Of this number 286, or 27.5 per cent had blood bromide levels above 50 mg. per 100 cc. on entry. Slightly over half of these patients were women. In 46 patients the blood bromides were above the toxic level of 150 mg. per 100 cc. This number represents 4.4 per cent of the total admissions during that period. In the 286 patients with abnormal amounts of bromide in the blood, the levels were as follows:

| | |
|---|---|
| 300 mg. or above per 100 cc. of blood | 12 cases |
| 250 to 300 mg. " " " " " | 4 cases |
| 200 to 250 mg. " " " " " | 18 cases |
| 150 to 200 mg. " " " " " | 17 cases |
| 125 to 150 mg. " " " " " | 15 cases |
| 100 to 125 mg. " " " " " | 57 cases |
| 75 to 100 mg. " " " " " | 80 cases |
| 50 to 85 mg. " " " " " | 83 cases |
| Total | 286 cases |

Treatment of bromidism consists in discontinuing bromides, forcing fluids, and giving an adequate diet and additional sodium chloride. In severe cases, large doses of sodium chloride may be inadvisable since it causes rapid elimination of bromides, which may injure the kidneys. Except in emergencies, parenteral saline is contraindicated. Treatment should correct the dehydration and malnutrition as well as eliminate bromides and restore chlorides to the body. Finally, when the patient is free of intoxication, attention should be directed to the underlying mental disorder, for which bromides had been used. Unfortunately, too often this condition will be less amenable to therapy. The prognosis in practically all cases is favorable so far as bromidism itself is concerned. The mortality rate is well under 1 per cent. Most deaths are due to pneumonia as a complication. A considerable number of patients will be found suffering from an underlying psychosis. The prognosis will depend upon the individual patient, and the type of mental disorder.

3. Malamud, W., and Rothchild, D.: Barrier between Blood and Cerebral Spinal Fluid, Arch. Neurol. & Psychiat. 24: 348-357 (August) 1930.
4. Fremont-Smith, F.; Dailey, M. E.; Sloan, D. H.: Distribution of Bromide in Blood Serum and Cerebrospinal Fluid, Arch. Neurol. and Psychiat., 33:764-774 (April) 1935.
5. (a) Harris, T. H., and Hauser, Abe: Bromide Intoxication, J.A.M.A. 95:94-96 (July 12) 1930.
   (b) Achard, Lucien: Bromide Intoxication and Blood Bromide Determinations, Read before North Carolina Neuropsychiatric Association, October 28, 1938.
   (c) Hanes, Frederic M., and Yates, Anne: Analysis of 400 Instances of Chronic Bromide Intoxication, South. M. J. 31:667-671 (June) 1938.
6. Kimberley, L. W.: Blood Plasma Levels in Bromoderma, J. Investigative Dermatology, 6:331-342 (Dec.) 1939.
7. Curran, F. J.: A Study of Fifty Cases of Bromide Psychosis, J. Nerv. and Ment. Dis. 88:163-192 (August) 1938.

*Summary*

Bromide therapy is effective, inexpensive and extensively used. Often, however, the dosage is uncontrolled and intoxication follows. The blood level at which poisoning occurs varies with the individual personality and with other factors, such as dehydration, malnutrition, age, arteriosclerosis, etc. The high incidence of bromidism is due chiefly to the unrestricted sale of bromide preparations, and failure of physicians to appreciate symptoms of intoxication. Blood levels above 150 mg. per 100 cc. constitute the toxic zone, although some patients are poisoned with lower levels and a few can tolerate much higher concentrations. Examination of the urine is unreliable, since it may be free of bromides in the presence of a heavy concentration in the blood. The clinical mental picture in bromidism is that of an organic reaction type, characterized by disorientation, impaired memory and thick, slurred speech. Pupillary changes not infrequently simulate general paresis. In a bromide delirium, both visual and auditory hallucinations are likely to be present. Twenty-seven and a half per cent of the patients admitted to the State Hospital at Morganton, North Carolina, showed bromides in the blood, and of this group 4.4 per cent were above the toxic level of 150 mg. per 100 cc. of blood. Treatment is simple, consisting of increase in sodium chloride intake, attention to the dehydration and malnutrition so frequently present, and cessation of bromide medication. The prognosis is good, the mortality being well under 1 per cent. After recovery from the bromide intoxication, an underlying psychosis or neurosis is almost always present, and deserves appropriate therapy.

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**The Prescription Reflex.**—The prescription reflex so highly developed by doctors should be controlled, for the most part, by a very long latent period. In its stead should come understanding of the pressures under which the patient lives his life. What are his fears, anxieties, insecurities? Remorse, lack of independence, failure to achieve or have achievements recognized, unhappy married life, the whole train of events leading to worry and unhappiness—understanding of these is the prime concern of the doctor, the educator, the economist, the industrialist, and the government expert. Because of the wide-spread implications of these important matters, no one may delude himself long about the virtue of what is called socialized medicine, apart from all of the other considerations involved in the organization and maintenance of a sound and healthy society.—Arlie V. Bock: Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:77 (June) 1942.

# THE PROPER FUNCTION AND HIGHEST USEFULNESS OF CERTAIN MEDICAL SPECIALISTS

JAMES M. NORTHINGTON, M. D.
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According to Herodotus, writing in the fifth century B. C., medicine as practiced among the Egyptians was on this wise:

Each physician treated a single disorder and no more; thus the country swarmed with medical practitioners, some undertaking to cure diseases of the eye, others of the head, others again of the teeth, others of the intestine, and some those diseases which were not local. The writer observed that the work was poor for the reason that physicians confined themselves to one disease or disease of one part.

In the France of the thirteenth century there were two classes of barber-surgeons: the clerical (long robe), who had a good many privileges, although their status was far below that of the physicians; and the lay (short robe), who let blood, dressed wounds and sores, and in the armies shaved the officers. Much the same condition obtained all over Europe.

Baas's *History of Medicine* contains numerous accounts of the decline in the quality of medical practice in different countries, as specialism came to take too large a place in the practice of medicine and surgery.

Dr. James A. Downing of Des Moines, speaking before the Eye, Ear, Nose and Throat Section of his State Medical Society in 1929[1], quoted Sir Richard Lake, eminent otologist of London, as saying: "Specialism tends to narrow mindedness, and even bigotry, and the natural tendency of specialism is that the specialty in which the individual is engaged tends so to obsess the mind to the exclusion of general pathological conditions, that they are frequently considered by him as originating, or at least to be in some measure due to, diseases which lie within the small compass of these powers."

In the annual oration before the Louisiana State Medical Society in 1938[2], Dr. E. H.

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Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

1. Downing, James A.: Address of Chairman, Section Ophthalmology, Otology, and Rhino-laryngology, J. Iowa M. Soc. 19:484-485 (Nov.) 1929.
2. Cary, E. H.: Did Clinical Specialization Anticipate Scientific Medicine? New Orleans M. & S. J. 91:1-6 (July) 1938.

Cary of Dallas, one-time president of the American Medical Association, said that "the title family physician was first used in 1225." He further stated that the early Egyptian physicians carried specialization to such an extreme that the patient as a whole was lost sight of; and that Socrates described the physicians of his time as "ignorant of the whole", and declared that "the part can never be well unless the whole is well."

In discussing before the West Virginia Medical Association in 1930 "The Relation of the General Practitioner to the Specialist," Dr. M. Y. Dabney[3], of Birmingham, inquired which specialties will justify their existence and which will become extinct by natural selection. He said he had a friend in New York who "tells me with pride of her physician," and "knows he is a good doctor because he is a specialist." This specialist had taken care of her through two pregnancies and delivered the babies, attended the babies through infancy and childhood, removed adenoids and tonsils for children and parents, and operated on the father for hernia and the mother for gallstones. Dr. Dabney concluded that "the general practitioner would perhaps eventually limit himself to diagnostic work, to handling fairly normal labor cases, to preventive work such as periodic health examinations, to treating *average clinical conditions*, and to the emergencies of practice."

A decade ago Dr. A. A. Houser, of Richmond[4], called attention to two important facts: (1) that up to very recent times the surgeon was considered in most communities the highest diagnostic authority, and (2) that now the patient is confused and receives inadequate service for not having the guidance of the general practitioner.

In the same meeting Dr. M. L. Breitstein, of Baltimore[5], stressed the need on the part of the doctor for broad understanding of medicine, and stated that the evaluation of the findings of the specialists belongs to the general practitioner.

Only three years ago, Dr. J. B. Gooch, of New Orleans, said this[6]:

"There is a natural tendency for each practitioner of medicine to consider, more or less subconsciously, every symptom complex solely from his particular viewpoint." He emphasized the fact that certain conditions can best be treated by a specialist, others by the general practitioner, others by the two working together; and that the general practitioner should be no mere keeper of an index file for the specialists. In summary, he stated:

"On the influence of the family physician rests the entire foundation of our present system of the practice of medicine and our best insurance against any change in this system is the justifying and strengthening of this influence and confidence. This can be accomplished by the general practitioner doing everything in his power for his patients; and the fullest possible cooperation of the specialist with him *from an economic and medical standpoint.*"

Dr. Gooch and most of the other modern authors quoted are eye, ear, nose and throat specialists.

In its issue for May, 1942, the *Nebraska State Medical Journal* carries an article on "The Correlation of Ophthalmology and General Medical Practice," by Dr. Harold Gifford, Assistant Professor of Ophthalmology in the University of Nebraska[7]. A good deal of what Dr. Gifford says supports my own views as to the problem before us.

Here is the essence of his paper:

To the patient "eyestrain" is something harmful and may lead to blindness. The word strain means to over-exercise, to use to an extreme and harmful degree. We let patients and people in general go on believing that eyestrain is harmful, while we know or should know it is not. "Have any of you ever seen a disease of the eye caused by eyestrain? Have you ever heard of a smell-strain, or a taste-strain, or a touch-strain?" "If there is no such thing as eyestrain then we should tell people so. One of the greatest fears of most people is blindness. Most of them are firmly convinced that eyestrain, I should say eye fatigue, may lead to loss of sight and a real neurotic is certain of this." Dr. Derby, of Boston, is quoted: "If the general public could learn that eyes are seldom strained this would be a much happier world to live in."

3. Dabney, M. Y.: Relation of General Practitioner to Specialist, West Virginia M. J. 26:645-650 (Nov.) 1930.
4. Houser, A. A.: Relationship of Various Specialties to General Medicine, Virginia M. Monthly 57:291-295 (Aug.) 1930.
5. Breitstein, M. L.: Relation of Oto-Laryngology to General Medicine, Virginia M. Monthly 57:299-302 (Aug.) 1930.
6. Gooch, J. B.: Relation of Specialist to General Practitioner, New Orleans M. & S. J. 90:392-396 (Jan.) 1938.
7. Gifford, Harold: The Correlation of Ophthalmology and General Medical Practice, Nebraska M. J. 27:178-181 (May) 1942.

This thoughtful article goes on:

Eye fatigue "is a harmless word and tells the truth. It is also reassuring and at least one-half of all the neurotics are satisfied if they can be reassured that they are not going to lose their vision if they use their eyes too much. The other half are terribly disappointed because now they have no crutch to lean on. No excuse for their hot compresses and their boric acid eye washes . . . This half needs to see a neurologist to find out why they need this crutch."

"Headache . . . is the universal excuse for breaking an unpleasant appointment or not doing an unpleasant job. Headache is not as easily disposed of as eyestrain, because there are some organic headaches, but I am sure ninety percent or more of the so called eye-headaches if you remove the possibility of eye fatigue are purely an emotional disturbance. If this is the case with headaches and eyestrain, why do we prescribe glasses? I say it should be done only to improve vision and if by doing this we can lessen fatigue, then we are on safe ground."

We must continue, he says, to give better medical care at a cost the people can afford to pay. Specialization is necessary but it increases the cost of medical service to the patient; this increased cost is the factor that people are complaining about; if we deliver better medical service to a greater number of people even at the same cost, we should be able to maintain the free practice of medicine.

The patient with loss of vision or an eye disease usually comes to the specialist directly. Most of the time of eye specialists is spent in dealing with vision and fitting glasses. It is here that our relationship with medicine breaks down. The patient complaining of headache is often referred to an internist for further study. If he comes to the internist he is often referred to the oculist. This causes extra expense. "After the double shuffle, the patient usually still has his headaches and is dissatisfied. If he hasn't already spent all his money on chiropractors and optometrists, he will promptly do this, or join the Christian Science Church."

"If we fitted glasses only to correct vision as it should be done, we might be killing the goose that lays the golden eggs. But I think it should be killed." This is not a new idea. Dr. Gifford quotes W. S. Inman, an Englishman, who wrote in 1921: "Headache, tics, insomnia, inability to concentrate attention, photophobia, flushing and watering of the eyes, neuralgia, anorexia, constipation, anemia, mental dullness, sleepiness and languor, squint, migraine, hysteria in many of its forms, are but a few of the troubles attributed directly or indirectly in modern English text-books to eyestrain. Some American ophthalmologists have been even more extravagant in their views, and claim to have cured scores of other ills by means of glasses. The mental and emotional state of the patient has not been considered and the possibility of this state determining the eye symptoms instead of the eye conditions causing the general manifestations appears to have eluded both oculist and physician. It is the object of this paper to show that the eye rarely produces other than ocular symptoms, unless the patient is emotionally unstable, and that he frequently is relieved, not by glasses but by suggestion or else by some adjustment of the inner life usually unknown to the oculist."

Dr. Gifford advises the general practitioner:

"A great many ocular symptoms are emotional disturbances and are due to fatigue. Do not refer them to the oculist unless there is a definite disturbance in visual acuity. Study the recent works on neurosis."

He advises his fellow-oculists:

"Prescribe glasses only to improve vision. If the refractive error is small and symptom large, look for an emotional basis . . . Never use the term 'eyestrain.' If the patient uses it explain the error to him. Use the term eye fatigue."

He advises all medical men:

"Maintain your personal integrity. Be absolutely honest." And to those who can be appealed to in no other way, he says: "Don't forget the optometrist and the government are pounding on the door."

A hundred years ago European specialists of high standing accepted no patient not referred by a practitioner of general medicine or surgery. I understand that this is the condition in Europe still.

How much better it would be if this were the case with us, and if each patient referred to a specialist were referred back to his or her own doctor as soon as diagnostic and therapeutic measures requiring special skill and equipment were completed.

Specialists should exercise their excep-

tional skill, acquired by long and assiduous application, on cases exceptionally difficult of diagnosis or treatment. Those cases in which only the diagnosis is difficult should be referred back to the family doctor with an outline of findings and suggestions as to treatment.

If all specialists would accept no patient unless referred by a general practitioner, refer no general practitioner's patient to any other specialist, refer patients back to the general practitioner for all care well within his abilities, proclaim it generally that general practitioners render diagnostic and therapeutic services capably in 80 to 90 per cent of their cases—including those in each specialist's own particular field—specialists would make more money. How? (1) They would not have their time taken up with trivialities, but with exceptional cases for which good fees are paid; (2) doctors now in general medicine and a far greater number of those being graduated would, finding general practice regarded by the public as of just as much honor and esteem, and requiring just as much intellect and learning as any specialty, spend their whole professional lives in general practice, and not specialize as early as possible in order to remove the stigma of being "a mere general practitioner", and to get into the charmed circle where the bright lights play and the golden guineas fall.

Not a few of those who have thought much on the subject and kept a wary eye on trends of the past two-score years believe that the only way for general practice to survive is for it to be upheld in the public esteem—given its due by those doing more glamorous practice. And of a certainty, were general private practice to be destroyed, the whole superstructure of specialism would go down in a mighty crash.

What a grand opportunity to remedy an injustice and at the same time benefit general practitioner and specialist—probably to save the very existence of medicine as we know it!

---

**The Forgotten Man.**—The type and formula of most schemes of philanthropy or humanitarianism is this: A and B put their heads together to decide what C shall be made to do for D. The radical vice of all these schemes is that C is not allowed a voice in the matter, and his position, character, and interests, as well as the ultimate effects on society through C's interests, are entirely overlooked. I call C the forgotten man.—W. G. Sumner, 1883.

## PEDIATRICS: A CHANGING MEDICAL SPECIALTY

JASPER S. HUNT, M. D.

CHARLOTTE

There are three fields in which pediatricians may find a place for their special knowledge. These are teaching institutions, public health work, and private practice. The immediate problem we are concerned with in this paper is the survival of the private practitioner of pediatrics. Under existing practices he is in danger of extinction. This is not an original thought. The leading pediatricians of the country and the American Academy of Pediatrics are alert to this danger and have sounded warnings that new phases of pediatrics must be embraced, or the pediatrician in private practice will practically cease to exist. His field is constantly narrowed because of competition from hospital outpatient departments and various governmental agencies who employ their own pediatricians. The general practitioner is increasingly well trained in rudiments of pediatrics and extracts his toll from the pediatrician's practice. The American Board of Obstetrics and Gynecology has included a knowledge of infant feeding as a requirement for licensure by that board. All of these progressive changes naturally narrow the range of the pediatrician's indispensability. Yet the fact remains that there will always be ills of childhood which are peculiar unto themselves. As Davison points out, "The private practice of pediatrics, although limited by the federal and state child health programs and the better training of general practitioners and medical students, will still remain because children have needs which are different from those of adults." In the study and better management of these needs lies the future of the private practitioner of pediatrics.

Table 1 is an analysis of the last 2516 consecutive diagnoses recorded in our private practice. Such an analysis should give specific information regarding the most frequent diseases the private pediatrician is called upon to treat, and an evaluation of the treatment methods now employed in the management of these conditions should sug-

Read before the First General Session, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

**Table 1**

**Consecutive diagnoses in 2516 cases in a private pediatric practice**

| | | |
|---|---|---|
| 1. | Nasopharyngitis, acute | 286 |
| 2. | Gastro-intestinal upset, acute | 241 |
| 3. | Malnutrition and feeding problem | 206 |
| 4. | Normal infant | 162 |
| 5. | Anemia | 156 |
| 6. | Otitis media, acute and chronic | 118 |
| 7. | Behavior problems | 93 |
| 8. | Phimosis | 81 |
| 9. | Lymphadenitis, simple, septic, acute and chronic | 81 |
| 10. | Rickets | 78 |

gest some means to broaden the scope of the pediatrician.

It is to be observed that behavior problems, a non-physical condition, is in seventh place. Yet the pediatrics textbook used during my student days, written only twelve years ago, makes no mention of childhood behavior problems and maladjustments. Such behavior problems as enuresis and masturbation are listed under "disease entities of the bladder" and "injurious habits" respectively. Thus, a new line of endeavor has been uncovered.

Stress should be placed on a problem only in proportion to its importance. The importance of behavior problems may be analytically determined. The human family grows in three ways: intellectually, physically, and emotionally. What is the relative status of these three components of growth and development? One will concede that adequate attention is being devoted to the intellectual growth of children. The very mechanics of daily life require more intellectual ability than our forebears possessed. Physically the race is constantly being improved. Table 2 illustrates the lowering of infant mortality rates in selected sections over the world in in the past three centuries. In the United States Registration Area the infant mortality rate has decreased from 100 deaths per 1000 live births in 1915 to 58 deaths per 1000 live births in 1936. When one turns now to the third—that is, the emotional component—of growth and development, an entirely different story is told. Society decrees that individuals beset by behavior problems of a degree sufficient to make them harmful to society shall be removed from society and kept in jails, reformatories, or other places of detention. Penal commitments are increasing, and the majority of those committed are not hardened criminals and repeaters, as one might expect, but adolescents,

**Table 2**

**Infant Mortality Rates**
**(Deaths per 1000 live births)**

| | | |
|---|---|---|
| 1781 | England and Wales | 280.0 |
| 1890 | United States Registration Area | 205.0 |
| | Raleigh | 215.0 |
| 1932 | United States Registration Area | 57.6 |
| | North Carolina | 66.5 |

most of whom have had a fair degree of education. Freud attributed many of the mental breakdowns suffered by his adult patients to episodes which occurred in their early lives. Thus, the adolescent who runs contrary to the rules of society has laid a fair groundwork for unhappiness in later life and possibly for psychosis. The proportion of the population suffering from mental disease is increasing (table 3)[1]; these patients occupy 47 per cent of the total number of hospital beds in the United States, and the annual cost of hospitalization varies between 150 and 200 million dollars a year. There are approximately 7000 babies born in the United States every day. According to Gayle[2], 1 out of every 25 of these will become insane on reaching adult life, 4 will become profoundly neurotic, 4 will become moderately neurotic, 4 will become mildly neurotic, and 12 will be fairly normal.

**Table 3[1]**

**Number of patients present at the beginning of each year and number of first admissions per 100,000 population—State hospitals, United States 1926-1936**

| *Year* | *Patients Present on January 1* | | *First Admissions* | |
|---|---|---|---|---|
| | *Number* | *Rate per 100,000* | *Number* | *Rate per 100,000* |
| 1926 | 246,486 | 217 | 52,793 | 46 |
| 1927 | 256,858 | 219 | 56,144 | 47 |
| 1928 | 264,511 | 222 | 59,417 | 50 |
| 1929 | 272,252 | 226 | 60,500 | 50 |
| 1930 | 280,252 | 229 | 62,738 | 51 |
| 1931 | 292,284 | 236 | 67,152 | 54 |
| 1932 | 305,031 | 245 | 67,083 | 54 |
| 1933 | 321,824 | 257 | 69,368 | 55 |
| 1934 | 332,094 | 262 | 69,934 | 55 |
| 1935 | 342,167 | 269 | 72,438 | 57 |
| 1936 | 353,305 | 276 | —— | — |

Thus, of the three components of human growth, only that phase having to do with mental health is showing unsatisfactory progress. In view of the fact that abnormal behavior has its basis in early life, it follows that the pediatrician fails to fulfill a very definite obligation to society if he does not practice the science of mental health. If

1. Dorn, H. F.: The Incidence and Future Expectancy of Mental Disease, Pub. Health Repts. 53:1991-2004 (Nov. 11) 1938.
2. Gayle, R. F., Jr.: The Problem in Caring for the Mentally Sick in Virginia, Virginia M. Monthly 66:6-12 (Jan.) 1939.

this idea is a new one, and we have shown that it is, then those of us already in practice must learn how to deal with behavior problems. I quote Davison again: "To remain successfully in private practice, the pediatrist must continue to lead in preventive measures and also include mental hygiene and adolescent problems in his field." The modern pediatrician must learn to correct the first recognizable outcropping of abnormality. These initial factors are not sufficiently recognized and stressed by pediatricians. In order to arrive at a few of the primary deviations from the normal, we have analyzed the behavior cases under our care. Forced feeding and giving the bottle past the first year of life are the beginning of behavior problems in 79 per cent of our cases.

Mental hygiene is assuredly not the only field a pediatrician must master. A vast majority of the diagnoses made in the private practice of pediatrics (table 1) are of somatic nature, notably upper respiratory infections with their sequelae. One does not have to be a medical specialist to treat a running nose. This is the general practitioner's job, and whether the pediatrician likes it or not, he is making it his job. However, it does require a medical specialist to treat the 25 per cent of those upper respiratory infections which are initiated by an underlying allergy. Herein lies the second field which the private pediatrician should incorporate in his struggle for survival, as the Academy meetings of recent years persistently point out. I have no intention of implying that a pediatrician should be a mental hygienist and an allergist. I simply state that the pediatrician should acquire a knowledge of these two fields in addition to his knowledge of infant feeding and other time honored details of the specialty of pediatrics.

Under the present system of the private practice of pediatrics, the pediatrician cannot include the fields of mental hygiene and allergy because of the lack of time. Before his monopoly on otoscopes and formula writing was overthrown, all the pediatrician required was a properly packed medical bag and an automobile. One cannot treat allergy or behavior problems by a house to house canvass because of the time required and because equipment cannot be transported to the home. The aid of an adequate staff of assistants is essential. Good pediatrics cannot be practiced in the home. It is no more harmful for a sick child to be transported to the pediatrician's office in an enclosed automobile over paved streets than it is for him to stay at home. It is not to be inferred that no children should be seen in the home. They will continue to be seen in the home just as infants continue to be born at home. However, an increasing majority of house calls will be made by the general practitioner. The man calling himself a pediatric specialist must accept the fact that he can no longer be a general practitioner with an age limit. If the modern specialist in pediatrics is unable to see this point, the specialty will have poor chance of survival.

*Summary*

Of the three classes of pediatricians, the private practitioner of pediatrics is in danger of extinction. We have demonstrated on the basis of an analysis of our private practice that the most frequently encountered diseases of children are at present being inadequately dealt with. We have recommended changes necessary to correct this situation through the inclusion of mental hygiene and allergy in the practice of pediatrics. We have pointed out that these fields cannot be included unless time is conserved. We have shown that only an office and hospital practice can meet this demand for time conservation.

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**The Liberating Ideas of Science.**—It can hardly be emphasized too strongly that it is not man's material comforts nor even the alleviation of his physical pains which are the greatest gifts of science to mankind. Science has freed men's minds. Foremost among liberating ideas is the belief that there is order and law in the universe and that this order can be discovered by questioning nature herself. Such belief was rare in the middle ages when processes of nature were generally attributed to supernatural causes: winds and storms to demons, comets and epidemics to the wrath of the Almighty toward a sinful world, and investigations of nature were persecuted by both church and state as Satanic magic and sacrilegious questioning of the acts of God. The Copernican theory widened our physical horizons and showed our earth a tiny speck in a universe of worlds. The theory of evolution brought a unity to our ideas of the organic world. The discovery of the mechanism of inheritance allowed an evaluation of the contributions of heredity and environment to the personality of individuals. The experimental method with adequate controls is the most valuable tool science has yet developed. Its understanding and use in daily life would mean more than all the scientific facts that schools can teach. — Albert Francis Blakeslee: Individuality and Science, Science 95:8 (January 2) 1942.

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## IS THE MEDICAL PROFESSION OVERMILITARIZED?

In the "Washington Merry-Go-Round" for October 8, Drew Pearson states that there is increasing concern over the problem of drafting a large army and supporting it without making serious inroads into civilian needs. Most of the argument centers around the medical profession:

"White House advisers point to physicians as an example. Today the army is plucking doctors from civilian life by all sorts of methods, first promising them commissions if they enlist, then threatening that if they don't enlist they will be drafted. Students in medical schools have been taken in as reserve officers, and, in some cases, third-year medical students who couldn't pass the officers' physical exam, are being drafted as buck privates — despite three years of medical training.

"The goal which the army seeks is seven doctors to every 1,000 men, whereas the British have found the optimum figure to be four and a half.

"Result is that many small communities find themselves without a doctor, and the situation will get worse. For at the rate of seven doctors per 1,000 men, a 10,000,000-man army will need 70,000 doctors and there are only 150,000 to 160,000 in the entire United States—of which only 105,000 are young enough for service in the medical corps."

That there is ground for the concern expressed by Mr. Pearson was shown in the article by Mr. Pickens, of the Hospital Section of the Duke Endowment, in last month's NORTH CAROLINA MEDICAL JOURNAL[1]. Mr. Pickens gave figures to show that in thirty-eight counties of North Carolina the ratio of physicians to civilian population on July 1, 1942, ranged from 1:1,208 in Dare County to 1:5,556 in Tyrrell, the average being 1:3,121.

A little calculation makes it evident that the army has almost exactly twenty-two times as many doctors per capita as has the civilian population of these thirty-eight counties. If the British army can get along with two-thirds the proportionate number of medical men allotted to our army, it may not be unpatriotic to renew the question raised by this journal a year ago[2], "as to whether the present division of doctors between our military and civilian population is equitable or wise."

* * * *

Soon after the above was written, the Associated Press stated (October 29) that a Senate subcommittee on manpower, through its chairman, Senator Pepper of Florida, had issued a report asserting that there had been "a tremendous overmilitarization of the doctor supply at the expense of the civilian population." The report charged that "foolish and dangerous" methods used to recruit physicians for military service have resulted in "hoarding and freezing unused doctors in the American armed forces in a ratio double that of the British."

Characterizing the condition as "acute and dangerous", the report urged that "The President, as commander-in-chief, should order a survey to be made of over-supply and under-supply of medical personnel for both the armed forces and civilian needs," that a reallocation be made when necessary, and that "Instruction should be given to the war manpower commission to cease its procurement drive for doctors in all states where quotas have already been attained."

The report further declared that rural areas are contributing from two to four times the proportion of doctors that are coming from urban areas.

This report of Senator Pepper's subcommittee powerfully strengthens the contention of the NORTH CAROLINA MEDICAL JOURNAL that the distribution of doctors between military and civilian populations has been far from equitable. For more than a year, at virtually all medical meetings held, terrific pressure has been extended to force all able-bodied doctors under 45 to go into the army. The overwhelming majority of American doctors are willing and anxious to serve their country where they can do most good, whether in the army, the navy, or civilian practice. Those who are left behind to care for the civilian population, whether they are too old to wear a uniform or whether they are under 45 but adjudged essential to their communities, should not have to feel humiliated. They will have to work harder than ever before, and will serve their country just as truly as if they were in service.

The foregoing paragraph is not meant to detract one bit from the glory due our military heroes, medical and non-medical. In our patriotic fervor, however, let us not lose our sense of proportion. It is as important to keep defense workers in the factories as to keep fighting men in the trenches. Warfare nowadays more than ever involves the total population; and civilians as well as soldiers need medical care.

1. Pickens, Marshall I.: The Effects of the War on the Medical Service in Thirty-Eight North Carolina Counties With Limited Personnel, North Carolina M. J. 3:570-571 (October) 1942.
2. Editorial, North Carolina M. J. 2:560 (October) 1941.

* * * *

## THE EPILEPSIES

Few words used in medicine are more filled with connotations of prolonged and dreadful suffering than the term "epilepsy". Doctor and patient alike stand appalled by the fearful seizures which characterize the major form of the disease.

As a result of the work of many observers the problem of convulsive seizures has been much more clearly defined in recent years. The newer concepts are well presented in the excellent book of Dr. W. G. Lennox[1], a Boston physician who has devoted his life largely to the study of the epilepsies. This book should be in the hands of all practicing physicians.

The discovery that the electrical activity of the brain can be graphically recorded, after the principle of the electrocardiogram (EKG), has led to the development of the science of electroencephalography (EEG). By this technique it has been found that the brain subject to convulsive seizures shows a type of disordered brain wave which is fairly characteristic, although disordered waves are also seen in other conditions. Here we are dealing with an "instrument of precision" which requires such expertness that only the readings of one with a great deal of experience can be trusted. It is improbable that the manufacturers will be able to create brain wave specialists after the manner in which they have created so many "heart specialists" with their portable electrocardiographs.

Increasing knowledge of the "symptomatic" and "idiopathic" epilepsies has been accompanied by advances in therapy, both surgical[2], and medical[3]. The bromides have been replaced in part by phenobarbital, and now the new drug diphenyl hydantoinate (phenytoin, Dilantin Sodium) seems destined by virtue of its superior anticonvulsive properties to supersede both the older remedies. It must be used with greater care, and under more stringent supervision than was necessary with bromides and luminal. As is the case with most potent remedies, it should be given to the point of mild toxicity to secure optimum results.

It is cheering to be able to report real advances in the diagnosis and therapy of the convulsive disorders; every physician responsible for the care of such patients should familiarize himself with this newer knowledge.

1. Lennox, W. G.: Science and Seizures: New Light on Epilepsy and Migraine, New York, Harper & Brothers, 1941.
2. Penfield, Wilder and Erickson, T. C.: Epilepsy and Cerebral Localization, Springfield, Illinois, Charles C. Thomas, 1941.
3. Lennox, W. G.: Gains Against Epilepsy, J.A.M.A. 120: 449-453 (Oct. 10) 1942.

* * * *

## WHAT LIES BEHIND THE DIAGNOSIS OF SCIATICA?

In years gone by neurology has been greatly neglected in the teaching of medical students, with the inevitable result that the average physician is incompetent in this field. A doctor who would resent an implication that his knowledge of heart or pulmonary disease was sadly deficient will admit without embarrassment that he knows very little neurology. This is due to the well-known fact that we readily admit a deficiency shared by all.

This defect in medical education seems all the more reprehensible when one realizes

that fully half the patients who consult physicians have complaints which demand a sound knowledge of the nervous system for their understanding and relief. Most so-called "organic" disease has an aura of functional nervous reaction, and the wise physician knows that his "cures" are very frequently due to the proper handling of this secondary manifestation of what is often incurable structural damage.

The accusation is frequently made that the therapy of diseases of the nervous system is discouraging. All too often this is the defense reaction of ignorance, for many of the most brilliant therapeutic achievements are the reward of intelligent neurologic diagnosis. A pertinent proof of this statement is the present status of the condition known as ruptured intervertebral disk.

Walter E. Dandy, in a recent paper[1], has summarized his own characteristically brilliant work in the diagnosis and treatment of this condition, giving full credit to other workers such as Love and Walsh, and Spurling and Grantham. He concludes his paper with the confident remark that "the foregoing additions leave little to be added subsequently in making the diagnosis and treatment of defective lumbar intervertebral disks almost free of error, and with almost perfect results." Can such a statement be matched in any other field of medicine?

All great therapeutic advances are tinged with regret, for one thinks inevitably of the vast numbers who suffered and died because of our previously defective knowledge. Now that we *know* that the vast majority of "sciaticas" and disabling lumbar pains can be traced to the pressure of ruptured intervertebral disks, we shudder to think of the pain and disability which might have been alleviated by the possession of such knowledge in the past. Such reflections should keep us humble, and stimulate us to search indefatigably for the truth which makes men free from suffering and disability.

1. Dandy, Walter E.: Improved Localization and Treatment of Ruptured Intervertebral Disks, J.A.M.A. 120:605-607 (Oct. 24) 1942.

* * * *

## FATIGUE

One of the most significant of Hitler's recent actions is the restoration of the eight hour working day in Germany. This step, one may be sure, was motivated not by any humanitarian impulse, but from the very practical consideration that longer hours did not pay the Reichstadt in goods produced. It may be recalled that when, many years ago, Henry Ford inaugurated a working day of eight instead of ten hours he was cordially hated by his fellow manufacturers for having wrought havoc in industry. When, however, the amazing result ensued that without any increase in personnel or change of equipment, production stepped up appreciably, others were quick to fall into line.

The importance of fatigue is not sufficiently recognized, perhaps because its results can not be demonstrated by instruments of precision and because its effects are not immediately apparent. The James M. Anders Lecture XIX[1], given on April 1, 1942, by Dr. Arlie V. Bock, discussed this subject clearly and completely. As Dr. Bock points out, physiological fatigue "is a natural product of the use of the body," and has its advantages. Pathological fatigue, however, "comes from strain, from lack of experience, from striving for ends beyond reach, from demands upon organisms unfit or unprepared to meet them."

Dr. Bock points out that fatigue not only plays a part in such recognized conditions as hyperthyroidism, peptic ulcer, and the neuroses, but is also of importance in less well recognized diseases such as congestive heart failure, migraine, arthritis, certain dermatological conditions, and respiratory infections. Most physicians have learned by personal experience that the fatigue of long hours, loss of sleep, and worry over very sick patients often paves the way for the virus of a cold or of influenza, for pneumococci, or for a spastic colon or peptic ulcer.

The average individual, Dr. Bock thinks, suffers from fatigue more often because he is not happy in his environment than from any other factor. "Those who are experts at worry become the most fatigued . . . If we look for causes of unhappiness, using this term in a broad sense, and do what we can to remove them, we shall have done much to relieve fatigue."

Dr. Bock might have added that if the physician himself would take more time for rest and wholesome recreation, would eat his meals as regularly as possible, and would cultivate the habit of leaving his worries outside the threshold of his home, he would be better prepared to minister to the diseased minds as well as the diseased bodies of his patients.

1. Bock, Arlie V.: Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:75-81 (June) 1942.

# CASE REPORTS

## CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

CRISTOPHER JOHNSTON, M. D.

*and*

GEORGE MARGOLIS, M. D.

*Clinical Summary*

DR. JOHNSTON: This 38 year old white man was admitted to Duke Hospital with the complaint of pain in the lower thorax and back of three or four months' duration.

The family history and marital history were irrelevant. The patient was said to have had asthma for the past ten years. He had had the usual childhood diseases without sequelae. He had had pneumonia at the age of 15 and influenza one year ago. Three weeks prior to the onset of the present illness he began having dull headaches in the temporal area, unassociated with nausea, vomiting, or visual disturbances. His appetite and digestion had been good. There were no urinary complaints. Fifteen years ago the patient had a Neisserian infection, from which he made an uneventful recovery.

The patient dated the onset of his present illness to approximately eight years ago, at which time he began having a dry, hacking cough, productive of small amounts of white, frothy sputum. The character of this sputum had changed in the past three or four months, becoming yellow and more purulent; during the past six or seven weeks it had contained bright red blood. During the past six months he had lost 21 pounds in weight, and for three or four months had complained of dull, aching pain in the right chest and lower dorsal region. Three months ago, for approximately one week, he had had night sweats. Five weeks prior to his admission to the hospital, within a twenty-four hour period, he lost his voice, and had been speaking in a whisper ever since. On admission he stated that he was raising approximately one pint of sputum daily, and that during the past two weeks he had had some difficulty in swallowing.

His temperature on admission was 37.3 C., pulse 90, respirations 18, and blood pressure 120 systolic, 90 diastolic. The patient was an undernourished, coughing male, who was unable to speak above a whisper. There was no generalized lymphatic enlargement. Marked limitation of motion of the left shoulder was noted, with point tenderness in the head of the humerus; movement of the shoulder caused severe pain, and there was some atrophy of the shoulder and upper arm muscles. The head was normal. There was no exophthalmos; the pupils were equal and reacted to light and on accommodation; the fundi were normal. There was complete adentia without replacements. The trachea was in the midline; the thyroid was not enlarged. Slight asymmetry of the chest with atrophy on the left was noted; expansion was equal. Whispered voice sounds were increased over the right upper lobe posteriorly; breath sounds were moderately increased over the left chest, where there were a few coarse rales and rhonchi; anteriorly, numerous coarse rales were heard over the entire left chest. The heart was not enlarged, and no murmurs were heard. The rhythm was regular, the rate normal. The abdomen and genitalia were normal. Rectal examination was negative, except for external hemorrhoids. There was no clubbing, cyanosis, or deformity of the extremities, and no edema. Neurological findings were within normal limits.

The hemoglobin was 78 per cent, and there were 4,200,000 red blood cells and 14,000 white blood cells, with 60 per cent polymorphonuclears, 3 per cent large lymphocytes, 21 per cent small lymphocytes, 9 per cent eosinophils, and 7 per cent monocytes. The blood Wassermann and Kahn tests were negative, and examination of the urine was negative. A fresh blood smear was not remarkable. The sedimentation rate, corrected, was 30 mm. per hour. A smear of sputum showed many gram-positive cocci; some fungi were seen. Sputum culture revealed Bacillus influenzae alpha, streptococcus, and Staphylococcus albus. Skin tests to Blastomyces, Monilia albicans, and Sporotricum were negative after thirty minutes, twenty-four hours, and forty-eight hours. A gastrointestinal series showed nothing unusual. Fluoroscopy and stereoscopic views of the chest showed both diaphragms limited in motion, with the left almost immobile; there was considerable thickening of the bronchi about both hila, especially on the left and radiating outward into the left upper lobe; the angles were clear; the heart was not en-

larged. In the oblique view there appeared to be a questionable cavity just lateral to the left hilum. Films of the left shoulder showed nothing abnormal. Pharyngoscopic examination showed paralysis of the left vocal cord. On bronchoscopic examination the left main bronchial wall in the region of the upper lobe orifice appeared fixed, without ulceration or fungation; no bleeding was encountered.

The patient remained in the hospital for approximately two weeks, during which time he ran an afebrile course and complained only of pain in the left shoulder region. Repeated sputum examinations failed to reveal any acid-fast organisms or fungi. The leukocyte count remained between 13,000 and 14,000, and he brought up approximately 100 cc. of sputum a day. Elastic tissue was found on several occasions. At 1 a. m. on the thirteenth hospital day he was seen by the night nurse and had no complaints. Ten minutes later he turned on his light and was found by the nurse sitting on the edge of the bed having a severe pulmonary hemorrhage. He expired shortly thereafter.

*Discussion*

DR. CRISTOPHER JOHNSTON: It seems clear from the history that we are dealing with a patient who for a long time had had asthma. This diagnosis is further strengthened by the presence of an eosinophil count of 9 per cent. However, it seems equally clear that there was a definite change in the picture a few months ago, with a change in the character of the sputum. More recently there had been hemoptysis.

The finding of a cavity on physical examination and the massive fatal hemorrhage might fit well with the diagnosis of a rapidly advancing tuberculous process, or a fungus infection. However, it must be borne in mind that repeated sputum examinations failed to reveal tubercle bacilli or fungi, and that the course in the hospital was entirely afebrile. An aortic aneurysm, with slow oozing of blood into a bronchus and the final massive hemorrhage, might conceivably have produced a similar train of events and would also serve to explain the paralysis of the left vocal cord; but such a diagnosis need not even be considered here, in view of the x-ray findings.

The most logical diagnosis, therefore, seems to be a bronchogenic carcinoma with central necrosis and cavitation. The only unusual feature in the case is the termination by severe pulmonary hemorrhage. A slow oozing of blood producing small hemoptyses is the rule in bronchogenic carcinoma, but in my experience, severe hemorrhages are unusual.

*Dr. Johnston's Diagnosis*

Chronic asthma

Bronchogenic carcinoma, with central necrosis and cavitation.

*Anatomical Discussion*

DR. GEORGE MARGOLIS: This patient furnishes an example of an unusual termination of a malignant pulmonary neoplasm. The tumor was a squamous cell carcinoma having its origin in the left upper lobe bronchus close to the hilum. It had produced a stenosis of the involved bronchus, and distal to the point of obstruction secondary infection with cavity formation had occurred. The massive fatal pulmonary hemorrhage had its origin from this cavity. Grossly, it was not possible to recognize the point of bleeding in the shaggy, irregular cavity wall, which contained much tumor in addition to the inflammatory reaction. A section through this region showed a vein of large caliber, with its entire lateral wall, which lay adjacent to the cavity, destroyed by the inflammatory reaction. While this might not have been the source of the massive hemorrhage, it furnished an excellent example of the process which led to the bleeding. A few other vessels near the cavity wall showed a similar, but less extensive change.

Another interesting feature of the tumor was its extensive invasion of the mediastinal structures. It had infiltrated about several of the nerves here, and had invaded the wall of the left auricle. The only distant metastases were found in the right kidney.

In the lower lobe of the left lung there was a marked ulcerative bronchitis, with extensive pulmonary fibrosis and endarteritis, and dense fibrous pleural adhesions. The right lung was free of these alterations.

*Anatomical Diagnosis*

Squamous cell carcinoma of the upper lobe bronchus, left lung.

Obstruction of the upper lobe bronchus, left, with secondary infection and cavity formation distal to obstruction.

Infiltration of tumor into mediastinal structures and into the left auricular myocardium.

Metastases to peribronchial nodes and right kidney.
Erosion of a branch of the pulmonary vein.
Massive fatal pulmonary hemorrhage.
Chronic ulcerative bronchitis, left lower lobe, with extensive pulmonary fibrosis and endarteritis, left.
Fibrous pleural adhesions, left.

## MEDICOLEGAL ABSTRACT

J. F. OWEN, M. D., LL. B.
Raleigh

**Contractual relationship. A physician is liable for neglect of patient only after relationship of physician and patient is established.**

This is a case in which the plaintiff, the administratrix for an intestate, sued a physician in an effort to recover damages for alleged negligent treatment of the intestate.

The plaintiff alleged that on May 18, 1930, her son, the intestate, who was then 22 years old, while riding in a motor vehicle driven by another person at a rapid and reckless rate of speed, was suddenly thrown from the vehicle in turning a curve, and as a result thereof his head struck a telephone pole, fracturing his skull, and otherwise injuring him to such an extent that he was rendered unconscious; that the injured man was immediately carried to the hospital of the defendant by his companions, and that the defendant accepted him as a patient, but failed to use ordinary care and skill in the diagnosis and treatment of said patient, so as to ascertain the extent of his injuries, and failed to make an x-ray examination of the patient's head. She alleged further that after keeping the unconscious man in the hospital for a short period of time, the defendant abandoned the treatment of the patient, and directed that he be returned to his home, a distance of eight miles; and that a few days later the plaintiff's intestate died of a concussion of the brain. This action was instituted to recover damages upon the theory that the defendant had failed to make a proper examination of the injured man in order to discover the extent of his injuries, and had been negligent in the treatment of the patient.

The defendant filed an answer, denying that he had accepted the plaintiff's intestate as a patient, and alleging that the plaintiff's intestate was brought into his hospital temporarily, in an intoxicated and unconscious condition. and that the companions of the injured man took him home with instructions to return him later when he became sober. He was never returned. and the defendant said that he was never requested to render any treatment.

The evidence tended to show that the patient was carried to the defendant's hospital as alleged, and that the defendant gave emergency treatment, made a cursory examination, and then directed the companions to take the injured man home. There was conflicting evidence as to the defendant's allegations that he asked that the patient be returned when sober.

This case was nonsuited in the Superior Court, whereupon the plaintiff appealed to the Supreme Court. The Appellate Court held that the evidence in the case was insufficient to establish a relationship of physician and patient, and that the act of the physician in not accepting the case was not a proximate cause of the injury from which the patient suffered, and which eventually brought about his death. As a consequence, the judgment of the Superior Court was upheld.

It should perhaps be mentioned in this connection that it was the feeling of the Supreme Court that a physician is not bound to accept a case unless he feels that he should do so, and no doubt the doctor in this particular instance was of the opinion that he could not be of much service to a man in an intoxicated condition, especially in a private hospital, where there was a possibility that he might be a disturbing influence among the other patients. In any event, the court held that he was justified in not accepting the case. There is always a danger, however, of adverse public sentiment when a doctor is called in an emergency of this kind and does not exert every effort in behalf of the patient. (North Carolina Supreme Court, Vol. 201, Page 42. Decision rendered Spring Term, 1931.)

# MILITARY MEDICINE

## OFFICE OF CIVILIAN DEFENSE

### October 15, 1942

### EMERGENCY BASE HOSPITALS

The Medical Division of the U. S. Office of Civilian Defense, through its Regional Medical Officers and State Chiefs of Emergency Medical Service, has now made emergency provision for the establishment of a chain of Emergency Base Hospitals in the interior of all the coastal States. They will be activated only in the event of an enemy attack upon our coast which necessitates the evacuation of coastal hospitals. Each base hospital will be related to the casualty receiving hospital which has been evacuated and it is expected that the staff will be recruited largely from the parent institution.

In order to meet a sudden and unexpected crisis without delay, arrangements have been completed with State authorities for the prompt taking over of appropriate institutions in the interior of the State for this purpose and with local military establishments for the transportation of casualties and other hospitalized persons along appropriate lines of evacuation.

More than 150 hospitals in the coastal cities are in the process of organizing small affiliated units of physicians and surgeons, which will be prepared to staff the Emergency Base Hospitals if they should be needed. These units are composed of the older members of the staff and those with physical disabilities which render them ineligible for military service, and of women physicians. In order that a balanced professional team may be immediately available the doctors comprising units are being commissioned in the inactive Reserve of the U. S. Public Health Service so that, if called to duty, they may receive the rank, pay and allowances equivalent to that of an officer in the armed forces.

Dr. George Baehr, Chief Medical Officer of the U. S. Office of Civilian Defense, states that the members of these affiliated hospital units will continue to remain on an inactive status for the duration of the war, unless a serious enemy attack occurs in their Region which necessitates the transfer of casualties to protected sites in the interior. Their commissions may be terminated upon their request six months after the end of the war, or sooner if approved by the Surgeon General. Such approval will be given in the event such officer desires active duty in the Army or Navy.

## OFFICE OF WAR INFORMATION
### War Manpower Commission

"The Directing Board of the Procurement and Assignment Service is pleased to announce that 95 per cent of the 1942 procurement objective of medical officers for the armed forces has already been met. Toward this total a number of states have supplied more than their share of physicians and only a few states are lagging behind in their quotas. It is from these states that the additional physicians needed during the current year should come.

"The recruitment of such a large number of physicians in a few months is a remarkable achievement and another demonstration of the traditional patriotism and unselfishness of the medical profession. In this achievement, and particularly in those of its members who are 'in service', the profession can justifiably take pride.

"The end, of course, is not yet. Increases in the armed forces will necessitate more medical officers and additional demands will be made upon the profession for medical services in critical war production areas. The Directing Board is convinced, however, that the physicians of this country will respond to future calls for service, whatever they may be, in the same splendid manner with which they have already volunteered for service with the armed forces."

Frank H. Lahey, M. D.
Harold S. Diehl, M. D.
Harvey B. Stone, M. D.
James E. Paullin, M. D.
C. Willard Camalier, D. D. S.
of the Directing Board

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## Classes In Medical Aspects of War Gases

A series of classes in the medical aspects of war gases is being organized and sponsored by the Office of Civilian Defense. The classes are designed to bring to the practicing physician, emergency medical officers, and such other key personnel of civilian defense, as are interested, the latest information on the action, treatment, protection against, and decontamination of, war gases.

The first class was held in Winston-Salem on October 25, and was attended by about seventy-five physicians. Classes have been scheduled as follows:

Fourth Medical District, Wilson.....November 5
Seventh Medical District, Charlotte....November 14
Tenth Medical District, Asheville.....November 16
Second Medical District, New Bern....November 22
First Medical District, Ahoskie.....November 24
Fifth Medical District, Fayetteville.....December 8

Classes for the remaining district will be announced later. All classes will convene at 2 p.m. and will continue until about 6 p. m., when a recess will be taken for dinner. Classes will reconvene at 7:30 p. m. and will be concluded about 9 p. m. This schedule will enable those attending to return home the same day.

The classes will be conducted by Dr. Haywood M. Taylor, Associate Professor of Biochemistry and Toxicology, Duke University School of Medicine and State War Gas Consultant: Dr. George T. Harrell, Assistant Professor of Medicine, Bowman Gray School of Medicine, and Assistant State War Gas Consultant; and Dr. James P. Hendrix, Associate in Medicine, Duke University School of Medicine and Assistant State War Gas Consultant.

An outline of the classes is as follows:

I. Chemical Warfare Agents—History—Classification
  A. Introduction—General Principles
  B. Classification
    1. Chemical and Physical Properties
    2. Tactical Use
  C. Mode of Action
    1. Lung irritants
    2. Vesicants
    3. Sternutators
    4. Lachrymators
    5. Systemic poisons
    6. Smokes
    7. Incendiaries
II. Pathology—Symptomatology—Differential Diagnosis and Treatment
  A. Lung Irritants
    1. Locus of Action and Solubility
    2. Pathology and Pathologic Physiology
    3. Diagnosis
    4. Therapy
  B. Vesicants
    1. Persistency
    2. Pathology and Pathologic Physiology
    3. Clinical Features
    4. Therapy
  C. Systemic Poisons
III. General Protective Measures
  A. Civilian protection
  B. Gas masks
  C. Protective clothing
  D. Shelters
  E. Decontamination
    1. Water and food
    2. Personnel
    3. Hospital protection
    4. Equipment
IV. Thermal Burns
V. Neuropsychiatric Problems
VI. Demonstration of Gases
  Odor Identification

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**Psychogenic Aspects of Fatigue.**—The psychogenic aspects of fatigue and their relations to illness still await scientific proof. Apparent cause and effect have long constituted the core of wishful thinking. Nevertheless, those who are experts at worry become the most fatigued. Next in line are those who are dissatisfied and unhappy, and last a large group swamped by the dull and dreary grind of daily tasks. We are quick to recognize shell shock in the soldier and sailor. We seem loath to recognize the same or analogous pictures in our patients when they follow from less dramatic, more insidious factors, slowly but surely at work over the months and years. Some of these influences we can stop, some we can modify, and for some we can teach acceptance. As a people we are victims of time and circumstances. We have too many bad conditioned reflexes; we know too many things that are not so. We are conditioned by fear fostered by commercial advertisers. We have crutches instead of feelings of independence. We have an increasing divorce rate. Emotions rather than reason control our acts. Whenever sound established routines, whether of chuch or state, are disrupted, as is now the case on a grand scale in Germany, and in their stead are placed chimerical objectives such as **Lebensraum**, disorganization of society follows. We hear much of subconscious motivations but if as physicians we could learn to deal with the conscious field we should greatly relieve the majority of our patients. If we look for causes of unhappiness, using this term in a broad sense, and do what we can to remove them, we shall have done much to relieve fatigue.—Arlie V. Bock: Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:80 (June) 1942.

# BULLETIN BOARD

## PRESIDENT'S MESSAGE

*Industrial Commission*

Last fall the Committee To Study Industrial Fees, of which Dr. Joseph Elliott, of Charlotte, is chairman, had two meetings with Governor Broughton. At the second of these meetings the three Industrial Commissioners, Mr. Wilson, Mr. Jurney, and Mr. Kimzey, together with their Medical Advisor, Dr. Horton, were present. After hearing the complaints and the facts, the Governor instructed the Industrial Commission as follows:

(1) Approve all bills submitted by doctors when the schedule is adhered to.
(2) Give the doctor the benefit of the doubt in questionable cases.
(3) Study the prevailing fees in various communities and be guided thereby in office visit allowance.

Complaints are still heard as to the unjustifiable reduction of bills. In view of this a meeting was arranged and held September 10, 1942, with the full Industrial Commission and their Medical Advisor, with the Medical Advisory Committee to the Industrial Commission, composed of Drs. Battle, Miller and Lyday, and with Dr. Elliott and myself.

At this meeting the Industrial Commission was informed of these continuing complaints and an effort was made to reach some agreement and arrangement whereby reductions would not be necessary. Figures were presented by the Industrial Commission to show that whereas the percentage of reduced bills during the previous three years had averaged something over 18 per cent, it has been reduced to about 11 per cent during 1942.

Unfortunately, but according to the record, there continue to be a very large number of bills submitted which disregard the fee schedule. It would seem either that many physicians do not have a copy of this schedule of fees, or that they do not avail themselves of it in making the charge for their services. It is urged that every physician who does not have a schedule of fees obtain one by writing the Industrial Commission, and that every physician adhere to this schedule.

It is not meant to imply that all the fault is with the physician. Cuts still continue to be made which to us seem arbitrary and unjustified. Especially is this so as regards frequency of visits, both office and home, and as regards certain small items that are not and can not be specifically enumerated in any schedule. But by a better understanding, it is hoped that these causes of dissatisfaction and irritation can be lessened or done away with. I can assure you that your officers and committees and the Industrial Commission are cooperating in an effort to bring this about.

Mr. T. A. Wilson, Chairman of the Industrial Commission, has expressed his willingness to attend our district meetings in an effort to create a clearer understanding of the many problems faced by the Industrial Commission. He has already been able to be present at several District Society meetings, and has spoken at some of them.

In summary it is urged that:

(1) Bills be submitted according to schedule.
(2) When a specific item is not covered by the schedule, charge be made according to the custom prevailing in the community.
(3) When the case is so unusual as to require an abnormal amount of treatment, or an unusual number of visits, the final report and bill be accompanied with a letter of explanation directed to the Industrial Commission and not to the insurance company.
(4) In case of dissatisfaction with the settlement of any bill, it be appealed to the Medical Advisory Committee and/or a hearing with the Industrial Commission and the Medical Advisory Committee be asked, so that all particulars can be thoroughly explained and understood.

## NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. C. C. Carpenter, Dean, and Dr. Tinsley Harrison, Professor of Medicine, attended the meeting of the Association of American Medical Colleges held in Louisville, Kentucky, October 26-28.

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Dr. Robert B. Lawson, Assistant Professor of Pediatrics, attended the meeting of the American Academy of Pediatrics in Chicago, November 4-7.

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Dr. C. Nash Herndon, of the Department of Medical Genetics, attended the Ninth Institute on Public Health Education and the Seventy-First Annual Meeting of the American Public Health Association in St. Louis, October 25-30. He presented an exhibit on Medical Genetics at the Public Health Association meeting.

## News Notes From The State Board Of Health

Vital statistics reports already are beginning to reflect a natural increase in the State's population. During August, eight months after Pearl Harbor, there were 8,099 babies born in North Carolina, as compared with 7,370 during the corresponding month a year ago—an increase of 729 in a single month, while the birth rate for August of this year was 26.5, as compared with an annual rate of 23.6 in 1941, and of 22.7 in 1940.

Dr. G. M. Cooper has stated:

"Nearly every month this year the infant and maternal death rate in North Carolina has shown a reduction over the corresponding month last year. In August, there lacked only one of being a hundred fewer deaths among infants under a year old than occurred during August, 1941, notwithstanding the fact that there were nearly eight hundred more births.

"Both the infant and the maternal death rate reached the lowest point in August for any month in the history of North Carolina since vital statistics have been kept."

* * * *

Among the services which the North Carolina State Board of Health renders none is more important than that which has as its objective the rehabilitation of crippled children.

The present program is made possible by State appropriations, federal grants, and limited local public and private funds, which aggregate approximately a quarter of a million dollars a year and make possible the rehabilitation of hundreds who, otherwise, would grow up warped and twisted and unfitted for the duties of life.

As of June 30, 1942, there were 19,877 crippled children on the register, representing an increase of twenty per cent during the past two years. It should be borne in mind that the register is not static, as considerable numbers are removed at quarterly intervals for various reasons.

This work is carried on under the direction of the Crippled Children's Department of the State Board of Health's Division of Preventive Medicine. The agency reports increased progress over the previous two-year period in respect to its original objectives of: (1) locating and registering cripples under 21 years of age; (2) providing specialized diagnostic services; (3) providing care under which specialized treatment may be carried out; (4) following and supervising the progress of children in their homes, and (5) engendering public interest in the solution of the problem of cripples.

In the light of the State agency's activities in coordination, it is proper to evaluate the services of related agencies. Mention is made of the services of the North Carolina Orthopedic Hospital, where provisions are made for a large number of children of all races below the 16-year level. This hospital has continued its cooperation during the past 2-year period. It operates with a maximum capacity of 160 children and has inaugurated several additional services in order to give more complete care to the child in respect to adequacy and ultimate rehabilitation. Fifty beds are devoted to Negro children, and the hospital has continued to operate at full capacity, having served more than a thousand in-patient admissions for service. Hundreds still are on the waiting list. The hospital has made important progress in the expansion of isolation facilities, occupational services, and in the educational features of its services to crippled children.

The North Carolina League for Crippled Children, functioning as a lay organization, has continued to cooperate; and, under a reorganization, has increased its effectiveness. This organization now has a full-time director, and during the 2-year period has more than doubled its resources for work with crippled children, resulting in considerably increased financing of extra needs of children not met by the State agency and financial support of local needs heretofore less adequately met. The services of the Vocational Rehabilitation Department have become an increasingly beneficial factor in the crippled children's program in North Carolina.

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## News Notes From the North Carolina Tuberculosis Association

At a recent meeting of the Executive Committee of the North Carolina Tuberculosis Association it was decided to have this year for the first time a State-Wide Seal Sale Chairman. The Executive Secretary was instructed to invite Mrs. J. Melville Broughton to serve in this capacity. Mrs. Broughton very graciously complied with this request.

* * * *

With the opening of the Eastern North Carolina Sanatorium at Wilson the number of beds in sanatoria throughout the state, exclusive of Oteen and private sanatoria, will be brought to 2,485, of which 1,429 are for white patients and 1,056 are for Negroes. Eastern North Carolina Sanatorium has 110 beds for whites and the same number for Negroes. Governor Broughton in his address at the dedication ceremony spoke with approval of the work being done by the Tuberculosis Association, saying that the policy for expanding funds is economically and financially beneficial to the state. The new sanatorium is architecturally beautiful and is equipped with the most up-to-date facilities for caring for patients. It will be under the same Board of Directors as the other two sanatoria. Dr. Paul P. McCain will be the General Superintendent, and Dr. Herman F. Easom, for several years Chief Clinic Physician of the Extension Department of the North Carolina Sanatorium, has been selected as Associate Superintendent and Medical Adviser.

* * * *

The Southern Tuberculosis Conference held in Memphis, Tennessee, on October 5, 6, and 7, was well attended in spite of the gasoline and tire rationing, and all its work both in the medical and the non-medical sections was based on methods and plans for "Control of Tuberculosis in War Time". Dr. M. D. Bonner, Jamestown, North Carolina, read a paper entitled "Bronchoscopy in Treatment of Tuberculosis" to the medical group. Frank W. Webster, North Carolina's Executive Secretary, presided over the non-medical section at one of the afternoon meetings. Others in attendance from North Carolina were Dr. H. L. Seay of Charlotte, and Mrs. May C. Nichols, Field Secretary.

It was decided to leave it to the discretion of the Executive Committee at a later meeting to decide if and when there will be a Conference meeting next year. Atlanta was selected as the place.

Officers elected for the ensuing year are: President, Dr. Victor F. Cullen, State Sanatorium, Maryland; Vice-President, Mr. Logan H. McLean, Executive Secretary of the Mississippi Tuberculosis Association. Mr. J. P. Kranz, Executive Secretary of the Tennessee Tuberculosis Association, will continue to serve as Secretary-Treasurer of the Conference.

Officers elected for the Southern Trudeau Society are: President, Dr. Horton Casparis, Head of the Medical Department of Vanderbilt University and Dr. Julius Wilson, New Orleans, Secretary.

## Fifth District Medical Society

About two hundred doctors attended the meeting of the Fifth District Medical Society held at Fort Bragg on October 1. The following program was presented at the scientific session, held in the afternoon:

A Welcome to Guests—Brigadier General H. C. Coburn, Jr., M.C.
Atypical Pneumonia—Captain H. A. Grennan, M.C.
A Survey of Aviation Medicine—Captain Normal Spitzer, M.C.
Medical Service to Parachute Troops—Major N. B. Gall, M.C.
The Treatment of Burns — Major Norman W. Thiessen, M.C.
War Neuroses — Major Norman Q. Brill, M.C.

A tour of the hospital followed the scientific meeting, and supper was served in the Mess Hall at 7 p.m. Dr. Donnell B. Cobb, Dr. Hubert B. Haywood, General Coburn, and Dr. R. D. McMillan made short talks at the dinner meeting. Dr. J. McN. Smith of Rowland was elected president and Dr. O. L. McFadyen of Fayetteville secretary for 1943.

## Eighth District Medical Society

The Eighth District Medical Society met in Asheboro on October 8. The following program was presented at the afternoon meeting.

Treatment of Certain Conditions of the Nasopharynx—McLean B. Leath, M. D., High Point
Sterility in the Male—Lacey Andrew, M. D., Winston-Salem
Chemical Warfare in Civilian Defense—George T. Harrell, Jr., M. D., Winston-Salem
Heart Failure—Certain Aspects of Diagnosis and Treatment—Edward S. Orgain, M. D., Durham
The Diagnosis and Management of Occupational Dermatoses—J. Lamar Callaway, M. D., Durham

A dinner meeting was held at the First Methodist Church, with Dr. George W. Joyner of Asheboro, President, presiding. Dr. Roscoe McMillan brought greetings from the State Medical Society, and Dr. Donnell B. Cobb of Goldsboro, President of the State Society, introduced the speaker, Dr. Thurman D. Kitchin, President of Wake Forest College. Dr. Kitchin's subject was "The Doctor".

Dr. F. C. Craven, of Asheboro, presented Dr. C. C. Hubbard, of Farmer, with a pen and pencil set in honor of his being "Dean of Randolph Physicians." Dr. Hubbard, who has been practicing medicine for 55 years, is the oldest practicing physician, from the point of service, in Randolph.

At the business meeting which followed the scientific session the following officers were elected for the coming year: President, Dr. Robert L. McMillan, Winston-Salem; vice-president, Dr. W. H. Sprunt, Winston-Salem; secretary, Dr. George Harrell, Winston-Salem. It was decided that the next meeting will be held in Winston-Salem.

## Tenth District Medical Society

The Tenth District Medical Society met at Hendersonville on October 22 at the Skyland Hotel. The guest speaker was Dr. Robert B. Lawson, Associate Professor of Pediatrics at the Bowman Gray School of Medicine of Wake Forest College, whose subject was "The Cause and Prevention of Hemorrhage in the Newly Born Infant". Dr. Paul McBee of Marion read a paper on the "Diagnosis and Treatment of Thyroid Disease"; Dr. LaBruce Ward of Asheville discussed "Convulsions in Children", and Dr. John Watkins of Asheville spoke on "Common Problems in Obstetrics".

## Buncombe County Medical Society

Dr. W. N. Sisk, Buncombe County Health Officer, spoke on "The Use of Phenothiazine for Intestinal Parasites" at the October meeting of the Buncombe County Medical Society, held on October 19.

## The National Foundation for Infantile Paralysis

The Third Annual Medical Meeting of the National Foundation for Infantile Paralysis will be held in New York City on December 3-4 inclusive.

## American College of Surgeons Cancels Clinical Congress

The annual Clinical Congress of the American College of Surgeons which was scheduled to be held in Cleveland November 17-20, 1942, was cancelled by the Board of Regents of the College at a meeting held in Chicago, Wednesday morning, October 14. Motivated primarily by patriotism, the Regents were influenced by the present conditions surrounding the general war program which have led to a greater burden on the members of the surgical profession in their local communities as a result of the large proportion of the profession which is serving with the armed forces. The Regents by this action took cognizance of the desire of the profession to do nothing which would interfere with the successful prosecution of the war program such as would be caused by temporary absence of its members from civilian duties during the period of the Congress, embarrassment of the transportation system, and interference with the work of the local profession in Cleveland in preparations and presentations incident to such a meeting.

## News Note

The Ashe County Memorial Hospital at Jefferson ended its first year of operation on November 7, 1942. Dr. Dean Jones, resident physician, has had a successful year. A new respirator and cystoscope have recently been added to the hospital equipment. Dr. C. L. Haywood, Jr., of Elkin, has been named as consulting surgeon since Dr. Fred C. Hubbard of North Wilkesboro has joined the Army Medical Corps.

## Erratum

The following corrections should be made in the article by Dr. H. D. Bruner, "A Review of Some Recent Advances in the Study of Factors in Hemolytic Reactions," which appeared in the May, 1942, issue of the **Journal:**

The last sentence in footnote 25 (p. 233) should read, "The chance occurrence of Rh-positive children would be 60.8 per cent of 13.03/84.6 per cent."

The sentence to which footnote 25 refers should read, ". . . the frequency of occurrence in all pregnancies of an Rh-positive fetus in an Rh-negative mother is calculated to be 9.36 per cent or 1 in 10.7[25,26]."

**The rapid decline in tuberculosis mortality rates** has been due mainly to lessening in the incidence of infection. Among those infected, the toll though diminished, is appalling. Mortality statistics, morbidity reports, autopsy examinations, tuberculin tests and x-ray surveys, indicate that about half of all infected individuals develop clinical tuberculosis, and that from 10 to 20 per cent of them eventually die of the disease. The high risk of disease and death due to infection by the tubercle bacillus justifies increased efforts for its prevention. **Emil Bogen, M.D., Amer. Rev. of Tuber., August, 1940.**

# AUXILIARY

## PUBLIC RELATIONS

The Public Relations Committees in national, state, and county auxiliaries are endeavoring in this year of crisis to put every energy into the war effort.

From the nine points of emphasis outlined for 1942 by Mrs. Frank Dwyer, National Chairman of Public Relations, the following seem most practical for North Carolina.

1. Promotion of health education among lay groups.
2. Promotion of nutrition programs giving *authentic* information.
3. Cooperation in all forms of National Defense.
4. Promotion of Nurses' Aides groups.
5. Practical assistance to the families of doctors in army centers.

Some one has said, "Casualties in war times are not only those who are killed in battle. Every skilled hand that is slowed by illness, every day lost on the assembly line by preventable illness is a gain for Hitler." What higher task can we set ourselves to than the promotion of health education?

Now, as never before, each individual citizen is asking how he or she can best serve in this total war, in which every man, woman and child in the United States is in some manner participating, willingly or unwillingly. The most complete answer is a simple one: Keep your health; maintain the health of your community; and, line upon line and precept upon precept, educate the people to save the doctors' time.

Mrs. Augustus S. Kech, in an address before the National Auxiliary in June, said about health education: "Who from the ranks of civilians can better render the service in this line than those of you who are so intimately connected with modern medicine, preventive and curative. You can strike the spark that lights the torch in every community in the nation . . . You can take the leadership in those communities to find the health needs and to assist in their solution. We have a real task before us and that is to educate the public in the best of modern public health. People are health hungry. They need authentic information, palatably served and digestible."

Closely tied up with health education is the effort to save the doctors' time. One of the main objectives in a $250,000 Keep Well Crusade recently launched by the Institute of Life Insurance is to impress upon the public the war time need for conserving the physician's time and strength. Today with one third of American physicians in the army, those who are left behind are already dangerously overworked. Let us by the press, radio and word of mouth impress upon the public ways in which they can make the doctors available to more people:

1. Call the doctor only when necessary. Go to his office when possible.
2. Help the doctor to plan his time by calling before 9 o'clock in the morning whenever possible.
3. Don't call your doctor on Sunday or on his afternoon off except for real emergencies. No one should be expected to work seven days a week.
4. Have an examination at the first sign of sickness; it may prevent a long and serious illness.
5. Go to the hospital when the doctor recommends it. He can see more patients there in less time.
6. Take courses in first aid, home nursing and Nurses' Aide training to help relieve the burden on trained personnel.
7. Be sure that your family is immunized against smallpox, diphtheria, whooping cough, typhoid fever, and tetanus.

Surely as doctors' wives we are vitally concerned, and will pledge ourselves and our auxiliaries to work untiringly in this Keep Well Campaign and Save Our Doctors Crusade.

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**Winthrop Chemical Company, Inc.**

Appointment of Dr. Chester M. Suter, professor of organic chemistry at Northwestern University and chairman of its department of chemistry, as Director of Chemical Research of Winthrop Chemical Company, Inc. was announced recently by Dr. Theodore G. Klumpp, president. He assumes his new duties immediately at the company's research laboratories at Rensselaer, N. Y.

"Dr. Suter's appointment implements Winthrop's policy of fundamental pharmaceutical research here at home which was enunciated one year ago," according to Dr. Klumpp, "when the company's contracts with I. G. Farben were terminated and its dependence on the latter's research ended. During the past twelve months we have substantially expanded our research program so that we could make our own contributions to medical progress without dependence on others."

Dr. Suter is a member of the American Chemical Society and of the American Association for the Advancement of Science.

# BOOK REVIEWS

**Human Pathology.** By Howard T. Karsner, M.D. Sixth edition. Price, $10.00. 817 pages with 460 illustrations and 24 subjects in color on 16 plates. Philadelphia: J. B. Lippincott Co., 1942.

The sixth edition of this volume, which has long since established itself as one of the better texts on human pathology, requires little comment. The book has been reset, and the use of two columns to the page makes for easier reading. The subject matter has been revised; additions and subtractions have been made to the material contained in the previous edition so that it now conforms to the present status of our knowledge. Controversial matter is handled adequately. The excellent bibliography has been expanded. To those interested in a clear, concise, comprehensive, well arranged presentation of modern pathology, this book is recommended.

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**A Textbook of Gynecology.** By Arthur Hale Curtis, M.D., Professor and Chairman of the Department of Obstetrics and Gynecology, Northwestern University Medical School; Chief of the Gynecological Service, Passavant Memorial Hospital, Chicago. Fourth Edition, Reset. Price, $8.00. 723 pages with 401 illustrations. Philadelphia and London: W. B. Saunders Company, 1942

The new edition of Curtis' textbook contains all the better features of the previous editions and many notable and worthwhile improvements. The section on anatomy has been expanded and is thoroughly illustrated with beautiful drawings by Tom Jones. This chapter includes all the fine studies of the subperitoneal connective tissue and ligamentous supports of the viscera of the pelvis and urogenital diaphragm and of the vessels of nerves which Dr. Curtis and his associates have made in recent years.

Chapters which deal with the endocrines and endocrinopathic disturbance of genital function reflect a certain skepticism, and the author confines himself to proven facts. He exhibits little enthusiasm for current endocrine commercial preparations.

The arrangement of the book is excellent for the practitioner and student, and all of the common gynecological lesions are discussed in a thorough but concise manner. Dr. Curtis repeatedly emphasizes the importance of complete and incomplete stenosis of the cervical canal as a cause of clinical problems, and the necessity of passing a cervical sound in any complete gynecological examination, when the possibility of pregnancy has been eliminated. Much less emphasis has been placed on operative technique and operative procedures than in the previous edition.

The chapters on cancer of the uterus are excellent and deal with every phase of this problem in some detail. The author recognizes the operative treatment of cervical carcinoma in selected cases, differing in this from the accepted treatment with radium alone advocated by practically all the leading gynecologists.

This book is an excellent and complete textbook of gynecology for both the student and practitioner, and contains many suggestions which make it a great aid in the office practice of gynecology.

**Osler's Principles and Practice of Medicine.** Edited by Henry A. Christian, M. D., LL.D., Sc.D., Hon. F.R.C.P. (Can.), F.A.C.P., Hersey Professor of the Theory and Practice of Physic, Emeritus, Harvard University. Fourteenth edition. 1475 pages. Price, $9.50. New York: D. Appleton-Century Company, 1942.

The publication of a new textbook of medicine, or a new edition of an old one, is always an event of interest. Such books are brief epitomes of the wisdom of the ages, where a single line often represents the arduous efforts of many minds. It is staggering to think of the tremendous labor which even the briefest of medical textbooks records. The path of the medical man must ever be from book to bedside and from bedside to book; from the accumulated experience of the centuries to the lessons learned by the study of the individual. Good, modern textbooks, monographs and journals are as indispensable as the stethoscope, microscope or scalpel.

When William Osler first published his **Textbook of Medicine** in 1892, it created a sensation which it is impossible for us of a younger generation to realize. From a mind trained by years of arduous and critical observation, and richly stored with reading, came a treatise on the science and art of medicine which shed such a clear and brilliant light upon a subject which badly needed a good house-cleaning that its publication marked an epoch and set a permanent standard for medical textbooks of the future.

Dr. Christian undertook some years ago to carry on the great tradition of Osler's textbook, and now he has just published his second edition of this classic. There is no clinician in America so well qualified as he to bring to a successful conclusion such a laborious undertaking. His long experience as a teacher, as the editor of **Oxford Medicine**, and as the author of many monographs, peculiarly fits him to wear the mantle of America's greatest clinical teacher. One expects from him a job well done, and his book fulfills our every expectation.

Since Osler's day the one-man textbook has been superseded somewhat in popular favor by textbooks written by many hands, each subject being treated by an author with special interest and training in the subject. This has resulted in brief monographic treatises, sometimes of uneven merit, and lacking the guidance of a unified viewpoint, such as a single author can contribute. On the other hand, it has been claimed that the advances of medicine have been so swift and specialized that they are beyond the powers of a single individual to know and report authoritatively. There is unquestionably something to be said for both views, and the final choice must of necessity be a matter of personal preference.

In such a brief review as this must be, one can only admire the general excellence of Dr. Christian's book. It represents the mature thought of a great clinician, and will prove a valuable addition to any library. One point alone illustrates the flexibility and balance of his mind. It is known to all experienced practitioners that fully one half of their patients have complaints involving the central nervous system. These may be primary, or secondary to some disease of other systems, taking the form of various neuroses. Such patients frequently are poorly understood and often badly treated; it is upon such medical errors that the quack and cultist thrive. Dr. Christian very rightly sets a new precedent for medical textbooks by putting such first things first, beginning his book with a discussion of the neuroses.

With this edition the book is fifty years of age. We hope it will continue to be a hardy perennial.

**The Pharmacopoeia of the United States of America.** Twelfth Revision (U.S.P. XII). Prepared by the Committee of Revision and published by the Board of Trustees. Easton, Pa.: Mack Printing Co., 1942.

This new revision of the U. S. Pharmacopoeia becomes official from November 1, 1942. It describes a total of 659 medicinal products, including 160 new drugs. Among the latter are ouabain, human measles and scarlet fever immune sera, surgical supplies, sulfanilamide, sulfathiazole and sulfapyridine, mersalyl, estradiol benzoate, neostigmine, and other basic medicines of greatest importance in clinical practice. The U. S. P. preparations are undoubtedly the most efficient forms for the administration of the basic drugs, and every physician should strive to utilize these preparations in his therapy. The best medical practice demands the use of a distinctive personal prescription. In order to attain this goal the Pharmacopoeia is invaluable, and every physician will profit greatly by having at his disposal this compendium, which serves as the legal standard for medicines in this country as well as in a number of the Central American Republics.

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**The Hand—Its Disabilities and Diseases.** By Condict W. Cutler, Jr., M.D., F.A.C.S., Associate Surgeon, Roosevelt Hospital; Director of Surgery, Welfare Hospital; Consulting Surgeon, New York Dispensary; Chief, Emergency Medical Service, New York County; Fellow of the American Surgical Association. 572 pages with 274 illustrations. Price, $7.50. Philadelphia and London: W. B. Saunders Company, 1942.

The author discusses the anatomy of the hand, acute, chronic and specific infections; various wounds of the hand, including burns, abrasions, fractures and dislocations; amputations; restoration of function; repair and reconstruction; deformities; tumors; and constitutional diseases of the hand. For his material the author leans quite heavily on other authorities, as is evidenced by the fact that 85 per cent of the 274 illustrations in the book are reproductions. The work covers a great deal of territory, and the reader is frequently referred to other works which discuss a given topic more deeply and at greater length than this book by its nature has been able to do.

Its value might be greatly enhanced by the wider use of line drawings and diagrams of hand anatomy, with greater emphasis on bone and joint structure. A few additions would also have proven useful—namely, discussion of the use of roentgen ray examinations in the diagnosis of gas bacillus infection; description of the use of tetanus toxoid; a fuller discussion of snake bites and their effects, with reference to types of wounds and types of snakes; some mention of the use of the Padgett dermatome: and, probably most important, a full discussion of the physiological basis, indications and contraindications for the use of heat and cold in treating disorders of the hand.

Its virtues lie in its orderly arrangement and in bringing together in one volume a great mass of material that heretofore has been more or less scattered.

**Advances in Pediatrics, Volume I.** Edited by Adolph G. DeSanctis, M.D. 306 pages. Price, $4.50. New York: Interscience Publishers, Inc., 1942.

This volume is one of the most valuable additions to the recent pediatric literature which this reviewer has seen. It consists of a collection of short monographs written on the subjects in which the most important advances have been made during the past year or two. The following monographs are included: Toxoplasmosis, Virus Diseases, Chemotherapy, Electroencephalography, Vitamin K, Persistent Ductus Arteriosus and Its Surgical Treatment, The Premature Infant, Tuberculosis, and Endocrinology. Some other advances in pediatrics are discussed in short abstracts. This book presents an up-to-date review of subjects about which our concepts have been changing rapidly. The monographs are well written and complete, without being too long or over-burdened with references to unimportant contributions.

In summary, this volume can be most highly recommended to anyone interested in the care of children. If future editions are as well planned and well written as this first volume, this will be one of the most important additions to annual pediatric literature.

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**Glandular Physiology and Therapy.** A Symposium Prepared Under the Auspices of the Council on Pharmacy and Chemistry of the American Medical Association. Pp. 571. Price, $2.50. Chicago: American Medical Association, 1942.

This monograph consists of collected reprints of a series of articles published under the auspices of the Council on Pharmacy and Chemistry in the **Journal of the American Medical Association.** The papers give a summary of recent advances in the physiology of the endocrine organs. The material presented is, however, far beyond the reach and interest of the general practitioner, for whose guidance presumably the articles were intended. For example, the first 141 pages are devoted to a consideration of the hypophysis with sections on growth, somatic, metabolic, lactogenic and the other factors presumed to be elaborated by this gland. Few of these products are available for therapeutic use and their application clinically is still in the experimental stage. A chapter has been devoted to the so-called "anti-hormones", the physiological significance of which is questioned by many authorities in this field. Although this collection of articles will prove of interest to the endocrinological specialist, it is questionable that they will shed light on the problems facing the general practitioner or aid him in attaining a rational view of the subject of endocrinology.

---

**How to Live in the Tropics.** A Practical Handbook. By Virginia Hunt. 178 pages. Price, $2.00. New York: Harcourt, Brace and Company, 1942.

The far-flung battlefields of the current war have created interest in areas of the world from the frozen Arctic to the torrid tropics, which no longer seem too far off to be of practical interest. The present book is intended to be a handbook of the practical problems of living in the tropics. It will prove useful to the emigrant or visitor to the tropics, for it includes many details of everyday life and health problems to be encountered in tropical climes.

**Synopsis of Pathology.** By W. A. D. Anderson, M.A., M.D., Assistant Professor of Pathology, St. Louis University School of Medicine. Price, $6.00. 661 pages with 294 text illustrations and 17 color plates. St. Louis: The C. V. Mosby Company, 1942.

The author states in the preface that "this volume is intended to fill a gap which has existed between the very elementary manuals of pathology and the abundant excellent larger textbooks and reference works. By the presentation of pathology in a compact and condensed form, it is designed to be useful to the medical student, to the dental student studying general pathology, and to the clinician who must maintain familiarity with the foundation sciences of medical practice."

The subject is covered in a brief and dogmatic fashion, with only an occasional brief mention of controversial issues. This is the great problem of any synopsis, as the author admits in the preface. The text illustrations are used freely. Some represent excellent photographic work; others are poor.

The author has undertaken a difficult job and handled it well. However, this reviewer sees little reason for the book, in view of the numerous fine textbooks of pathology which are only slightly larger than this synopsis and which cover the subject matter adequately.

---

**Synopsis of Ano-Rectal Disease.** By Louis J. Hirshman, M.D. Second edition. Price, $4.50. 315 pages. St. Louis: The C. V. Mosby Company, 1942.

This is a short, concise treatise on ano-rectal diseases. It is essentially a synopsis, as the title indicates, and will serve its most useful purpose as a reference manual for general practitioners of medicine.

Included among the many subjects discussed are anatomy (the essential facts); symptoms of particular importance; certain technical considerations; constipation; pruritis; fissures and fistulae; hemorrhoids; and, lastly, focal infections of ano-rectal origin, taken up in a brief chapter which is most interesting and timely.

This is, in general, a very excellent piece of work. and will serve admirably the general practitioner of medicine as a concise and practical book on ano-rectal diseases.

---

**A Handbook of Allergy for Students and Practitioners.** By Wyndham B. Blanton, M.A., M.D., Litt.D., Professor of Clinical Medicine and Chief of the Immunology Clinic, O.P.D., Medical College of Virgina, Richmond, Virginia. Price, $3.00. 190 pages, illustrated. Springfield, Illinois: Charles C. Thomas, 1942.

Dr. Blanton has given us an excellent volume on allergy. It is neither too detailed nor too deep for the medical student, and is a ready volume for the busy practicing physician. It has been divided into three parts: Fundamentals of Allergy, The Causes of Allergy, and The Results of Allergy. It is condensed so that one is not dismayed at the time required to read or study this special subject. It is well written and should find a wide use in the class room and in the hands of the physician.

## THE SALVAGE STORY

*by*

PAUL C. CABOT

*Deputy Chief*

CONSERVATION DIVISION

WAR PRODUCTION BOARD

To move every pound of critically-needed waste materials into the flow for the manufacture of implements of war, is the over-all objective of the Salvage Branch of the Conservation Division, WPB. To make every man, woman and child in America conscious of this need, and to secure the active cooperation of every American to "get in all the scrap —NOW" is equally important.

The steel mills of America are doing a grand job to keep our war production on the schedule established by Donald Nelson. However, it was divulged at the Newspaper Editors' Meeting in Washington that there is an inadequate inventory of iron and steel scrap in the hands of consumers.

It has been determined that if our production schedule is to be maintained, 17,000,000 net tons of purchased iron and steel scrap are wanted in the second half of 1942 to give the iron and steel furnaces sufficient inventories to prevent shutdowns when the cold weather sets in.

The War Production Board, through its Salvage Branch, approaches this problem of "getting in the scrap" in four major directions: namely through—

1. The Industrial Salvage Section, which is charged with the responsibility of educating industry to salvage all critical waste materials, to speed up the return of these materials into the War Production stream and to help industry to use established channels of disposal.

The present immediate objective of the section is to urge and assist the executive management of every industrial establishment in the country to locate, classify and move into war production channels all dormant and production scrap in their possession as speedily as possible. "Dormant" scrap is defined as obsolete machinery, tools, equipment, dies, jigs, fixtures, etc., which are incapable of current or future use in the war production effort because they are broken, worn-out, irreparable, dismantled or in need of unavailable parts necessary to practical reemployment.

2. The General Salvage Section is charged with establishing salvage programs in local community areas, appointing local committees and directing their activities. Their salvage operation extends to every household including farms, all retail stores, garages, hotels; small businesses and the smaller industrial organizations in rural areas.

3. The Special Projects Salvage Section is responsible for salvaging large accumulations of secondary and waste materials that are tied up due to financial, legal, political, and other reasons and which cannot be quickly handled by other Sections in the normal course of operation. Special projects include such things as abandoned railroads, streetcar lines, factories, bridges, etc. Recently the Metals Reserve Company, at the request of the Conservation Division, set up an organization entitled War Materials, Inc. for the purpose of salvaging iron and steel scrap which cannot be topped within existing price ceilings. The War Materials, Inc. will work in cooperation with the Special Projects Section and it is expected that the tonnages of so-called marginal scrap will greatly expand as a result of this new organization.

4. The Automobile Graveyard Section, now working through 254 field representatives, has the re-

sponsibility to see that 20,000 graveyards in the United States are functioning as producing units. With the help of the steel industry, nearly all the regions in the country have been placed on a 60-day plan, which means that the dealers and brokers have been told that graveyards have been informed that they must break up and sell their inventory within the same period. It is essential to keep these graveyards as operating scrap producing units. Most people mistakenly believe that best results are obtained by the elimination of automobile graveyards. In view of the fact that anywhere from 1,000,000 to 2,500,000 cars annually come off the roads and enter graveyards, it is essential that they be kept in operation as an important continuing source of scrap metal supply. To keep these operations in existence it is as essential that they have an adequate inventory as it is that any other industry maintain a reasonable inventory.

---

### Continuous Caudal Anesthesia in Obstetrics

A new method for continuous or fractional caudal anesthesia has been developed by Edwards and Hingson (Am. J. Surg., 57:459 (September), 1942). It appears to be remarkably effective and yet retains the complete cooperation of the patient. There has been uniform absence of delirium, narcosis, cyanosis, nausea, vomiting, and anoxemia, and no interference with uterine contractions. Every infant in the authors' series breathed spontaneously except one stillborn known to have been dead several days before delivery.

The technic consists in the injection of an initial dose of 30 cc. of 1½ percent solution of 'Metycaine' (Gamma-(2-methyl-piperidino)-propyl Benzoate Hydrochloride, Lilly) followed at thirty or forty minute intervals with 20 cc. of the 1½ percent solution. In every case there has been complete freedom of pain and discomfort of active labor within five minutes following the initial dose. Episiotomy and outlet forceps, and repair of the episiotomy has been without pain. The average duration of anesthesia has ranged from four and three-quarters to thirteen hours.

One patient described was having eclamptic convulsions when admitted, with blood pressure 220/110. After the initial dose of 'Metycaine' was given, the pressure declined to 140/90 and the clinical picture improved remarkably. The anesthetic was continued throughout the day without the blood pressure exceeding 150. She delivered a healthy baby spontaneously thirteen hours after the initial dose.

---

### Agar and the War

The war has cut off importations of agar-agar, which normally come from Japan. The War Production Board has frozen all stocks of agar in order to protect the requirements for bacteriologic culture medium use of the Army, Navy and civilian hospitals and laboratories.

This W.P.B. control of agar stocks made it necessary for Mead Johnson & Company to discontinue the manufacture of "Pectin-Agar in Dextri-Maltose," a product which has been used by the medical profession for the treatment of diarrhea in infants.

Fortunately, Mead Johnson & Company have another product, Casec, which gives good results for the same purpose. Physicians who are not familiar with Casec are invited to write for samples and descriptive literature to Mead Johnson & Company, Evansville, Indiana.


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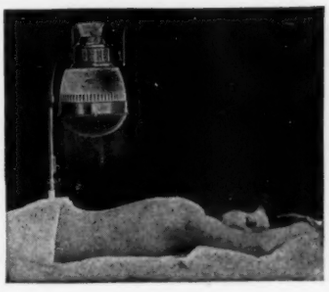

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## "Pay-Your-Doctor-Week"

Fifth annual "Pay-Your-Doctor-Week" was observed this year November 1 to 7. Inaugurated in 1938 by California Bank in Los Angeles, "Pay-Your-Doctor-Week" is now observed annually in scores of cities throughout the United States.

This year, however, the banks sponsoring "Pay-Your-Doctor-Week" suggested to the public that they should not only pay their doctors but also arrange to retire all outstanding debts and place themselves upon a cash basis at the earliest possible moment. In this the banks are supporting the contention of the administration that to get out of debt is a patriotic duty the people owe the country inasmuch as it will place them in a position to buy more war bonds and to care for the increasing tax load they will be asked to shoulder.

The original purpose of "Pay-Your-Doctor-Week" was to turn the publicity spotlight on the fairly widespread tendency to "let the doctor wait" until all other bills have been paid, and to pay tribute to the members of the healing profession who quietly but relentlessly continue the battle against disease, sickness and death, even now when the world seems bent on destroying itself.

This year, it is also pointed out that with many of the nation's doctors being called into the service of the country, those who remain behind will be expected to assume added burdens and added expense.

Because "Pay-Your-Doctor-Week" was originated by California Bank and is sponsored by the banking profession, the question of medical ethics is not involved. The banks call attention to the fact that funds are available to lend for the purpose of paying doctors' bill and for similar purposes but urge that instalment credit be used to get out of debt rather than further into debt.

---

MEDICAL OFFICERS NEEDED—TENNESSEE VALLEY AUTHORITY. The Tennessee Valley Authority is in urgent need of medical officers who are not eligible for military service and who are willing to accept assignments to war industrial activities (construction, manufacture of war chemicals, and manufacture of hydroelectric power) as their participation in the all out war effort. Responsibilities include physical examinations, industrial hygiene, care of injuries, medical care to families in remote construction areas, and general public health responsibilities in construction camps and villages. Salary ranges from $3200 to $4200 per annum with opportunity for promotion. For further information write to Dr. E. L. Bishop, Director of Health, Tennessee Valley Authority, Chattanooga, Tennessee, or to the Personnel Department, Tennessee Valley Authority, Knoxville, Tennessee.

### Squibb Putting Entire Line of Dry Packs In "Wartime Conservation Containers"

To save several million pounds a year of war-needed metals, E. R. Squibb & Sons, New York, are now redressing their entire line of dry packs in cardboard packages. Already Squibb Epsom Salt and Squibb Sodium Bicarbonate are on dealers' shelves and in consumers' medicine cabinets in the new containers, and the rest of the products are coming on the market as fast as the laboratories can turn them out. Across the top of each package is a sealing band which reads: "Wartime Conservation Container—The Priceless Ingredient of Every Product Is the Honor and Integrity of Its Maker."

In appearance, the new containers are almost identical with the former metal ones. Same colors, same label, same design. Made of especially treated paper, they are lined with chipboard and the product itself is sealed in a waxpaper or cellophane bag. This arrangement makes the packages dirt-proof, moisture and vapor resistant, and gives protection against light and heat.

Light in weight, yet sturdy, the new Squibb containers are easy to handle both in the store and in the home, and some consumers have already reported them much easier to open than many of the prewar metal ones which were sometimes a hazard to fingernails and fingertips.

There will be no change in price in the redressed items, Squibb states, in spite of the fact that in some cases the new containers cost more to produce than the former metal ones.

For Shy, Nervous, Retarded Children

Year round private home and school for girls and boys of any age on pleasant 150 acre farm near Charlottesville.

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*Mrs. J. Bascom Thompson, Principal*

**THE THOMPSON HOMESTEAD SCHOOL**

**Free Union, Virginia**

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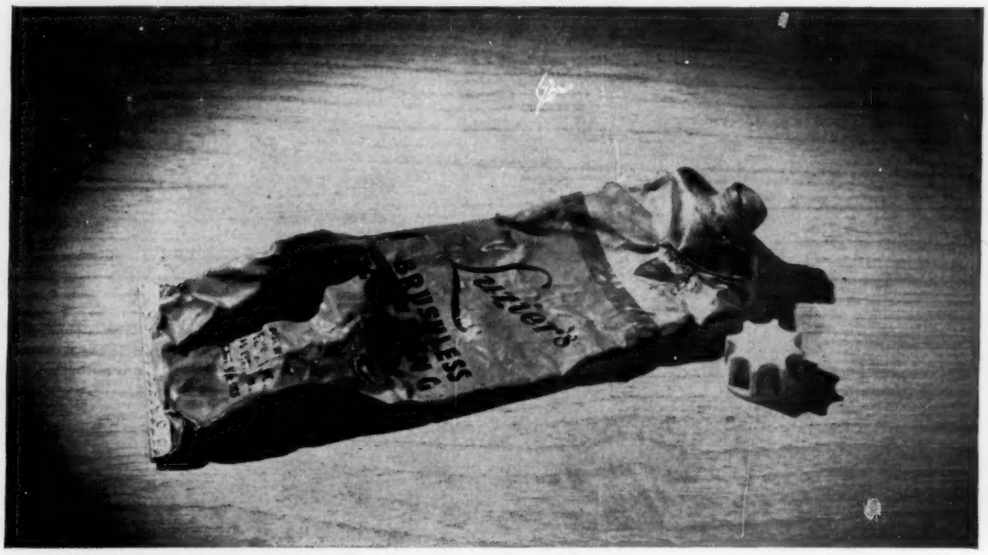


# *Just An Old Metal Tube*

WHO'D have thought a year ago that an old metal tube would be as important as it is today? Remember how we used to throw them away? Come to think of it, we were rather wasteful in more ways than one, weren't we? Today metal is vital; it is needed to produce our implements of Victory — guns, tanks, jeeps, aircraft, munitions . . . Today you cannot buy a tube of shaving cream or toothpaste without turning in an old tube. When this conservation order was proclaimed there were the usual few persons who griped about it. But then there are always a few **"gripers"** on hand—you know, sourpusses who complain about everything, blame everybody but themselves, and contribute absolutely nothing to the common good. Come to think of it, though, it's perhaps a good thing we have such persons; they serve as a comparison by which we can appreciate the simple greatness, the kindness and ruggedness and good humor of the average American, who uncomplainingly shoulders his country's burdens, jokes about the effect on himself of the rationing of foodstuffs and gasoline and rubber, and has his own unprintable opinion of **Hoarders** and **Gripers** . . . **Funny**, but an old metal tube has almost become a symbol of our national character. Every day hundreds of thousands of persons turn in old metal tubes, and in the aggregate these tubes represent a considerable quantity of metal — not only metal in the literal sense, but figuratively the mettle of a people who know that the winning of this war depends on every single one of us contributing his full share, even though it be just an old metal tube.

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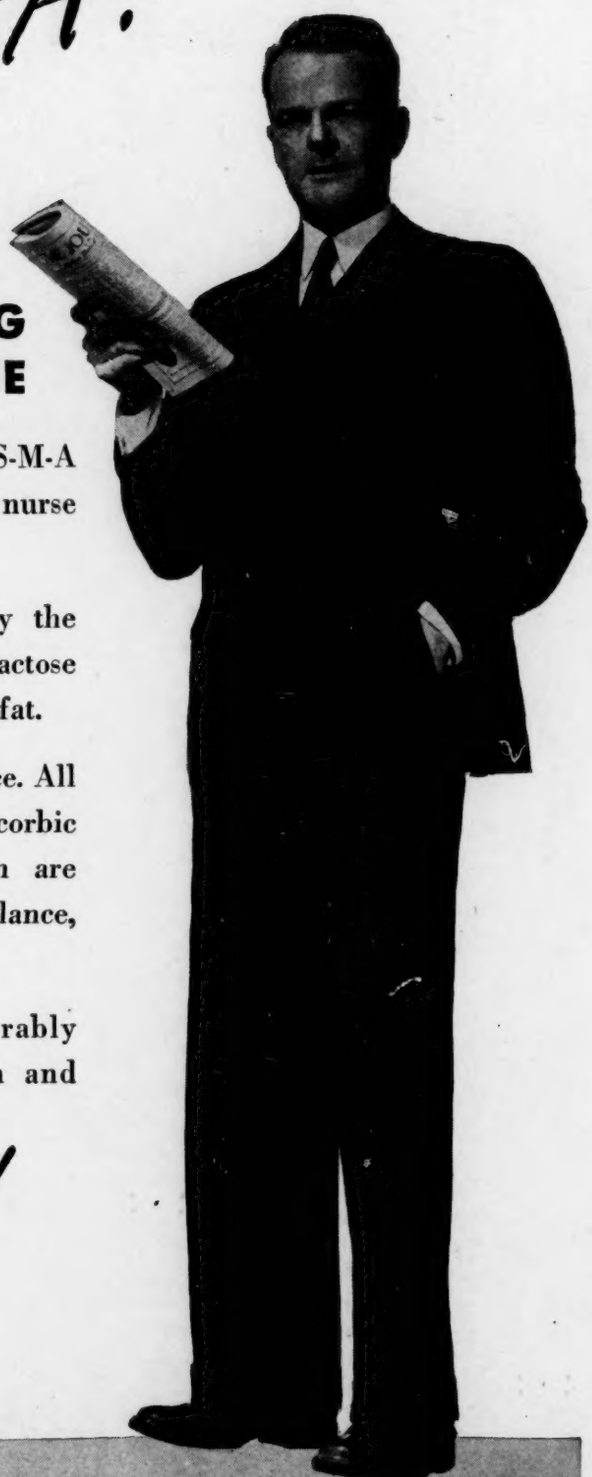
*I like S-M-A*!*



**IN INFANT FEEDING ...IT SAVES MY TIME**

- Directions on how to mix and feed S-M-A can be explained to the mother and nurse in two minutes.
- S-M-A is more easily digested by the normal infant because of the all-lactose carbohydrate and the unique S-M-A fat.
- With S-M-A nothing is left to chance. All the vitamin requirements, except ascorbic acid, together with additional iron are included in S-M-A in the proper balance, ready to feed.
- S-M-A fed infants compare favorably with breast-fed infants in growth and development.

*Prescribe S-M-A!*

ACCEPTED AMERICAN MEDICAL ASSN. SMA REG. U.S. PAT. OFF.

*S-M-A, a trade mark of S.M.A. Corporation, for its brand of food especially prepared for infant feeding—derived from tuberculin-tested cow's milk, the fat of which is replaced by animal and vegetable fats, including biologically tested cod liver oil, with the addition of milk sugar and potassium chloride; altogether forming an antirachitic food. When diluted according to directions, it is essentially similar to human milk in percentages of protein, fat, carbohydrate and ash, in chemical constants of the fat and physical properties.

S. M. A. CORPORATION • 8100 McCORMICK BOULEVARD • CHICAGO, ILLINOIS